Government
Publications

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Ontario. Legislature Assembly.
Sessional papers

SESSIONAL PAPERS.

VOL. XXII—PART VII.

FOURTH SESSION OF SIXTH LEGISLATURE

OF THE

PROVINCE OF ONTARIO.

SESSION 1890.

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ARRANGED ALPHABETICALLY.

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LIST OF SESSIONAL PAPERS.

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No. 1.. Return to an Order of the House of the sixth day of March, 1889, shewing the names of all publishers of Public School text books, with the respective books published by them and the prices thereof. Also, for copies of all correspondence by or with the Minister of Education or any officer of his Department respecting the price or publication of Public School text books, subsequent to that already brought down. Presented to the Legislature, 4th February, 1890.—*Mr. Preston.* (*Printed.*)

No. 2.. Return to an Order of the House of the eleventh day of March, 1889, shewing the number and location of Public Schools in Ontario in which any language other than English is used in the work of teaching, either wholly or in part. A list of text books in any language other than English used in such schools. The total number of scholars attending each of such schools. The number of scholars in each of such schools using text books in any language other than English. The number of teachers in such schools who cannot use the English language in teaching. Presented to the Legislature, 4th February, 1890.—*Mr. Craig.* (*Printed.*)

No. 3.. Report of the Inspector of Insurance for the year 1889. Presented to the Legislature, 3rd February, 1890. (*Printed.*)

No. 4.. Report of the Registrar-General, relating to the Registration of Births, Marriages and Deaths for the year 1888. Presented to the Legislature, 7th February, 1890. (*Printed.*)

No. 5.. Report of the Ontario Agricultural and Experimental Union for the year 1889. Presented to the Legislature, 7th April, 1890. (*Printed.*)

CONTENTS PART II.

No. 6.. Report of the Minister of Education for the year 1889, with the Statistics of 1888, in which is included the Reports of Mechanics' Institutes, Scientific Societies, Toronto University, School of Practical Science and Upper Canada College. Presented to the Legislature, 6th March, 1890. (*Printed.*)

No. 7.. Regulations and Correspondence relating to French and German Schools in the Province of Ontario. Presented to the Legislature, 31st January, 1890. (*Printed.*)

CONTENTS PART III.

No. 8.. Report of the Council of the Agricultural and Arts Association for the year 1889. Presented to the Legislature, 13th February, 1890. *(Printed.)*

No. 9.. Report on the working of the Tavern and Shop Licenses Acts for the year 1889. Presented to the Legislature, 6th February, 1890. *(Printed.)*

No. 10.. Report upon the Asylums for the Insane and Idiotic, for the year ending 30th September 1889. Presented to the Legislature, 28th February, 1890. *(Printed.)*

No. 11.. Report upon the Common Gaols, Prisons and Reformatories for the year ending 30th September, 1889. Presented to the Legislature, 3rd March, 1890. *(Printed.)*

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No. 12.. Report upon the Institution for the Instruction and Education of the Deaf and Dumb, Belleville, for the year ending 30th September, 1889. Presented to the Legislature, 31st January 1890. *(Printed.)*

No. 13.. Report upon the Institution for the Education and Instruction of the Blind, Brantford, for the year ending 30th September, 1889. Presented to the Legislature, 31st January, 1890. *(Printed.)*

No. 14.. Report upon the Hospitals of the Province, for the year ending 30th September, 1889. Presented to the Legislature, 12th March, 1890. *(Printed.)*

No. 15.. Report upon the Houses of Refuge and Orphan and Magdalen Asylums for the year ending 30th September, 1889. Presented to the Legislature, 20th March, 1890. *(Printed.)*

No. 16.. Bursar's Statement of Cash Transactions of the Upper Canada College for the year ending 30th June, 1889. Presented to the Legislature, 18th March, 1890. (*Printed.*)

No. 17.. Report of the Entomological Society for Ontario, for the year 1889. Presented to the Legislature, 31st March, 1890. (*Printed.*)

No. 18.. Public Accounts of the Province for the year 1889. Presented to the Legislature, 11th February, 1890. (*Printed.*)

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No. 19.. Estimates for the service of the Province until the Estimates for the year are finally passed. Presented 4th February, 1890. (*Not Printed.*) Estimates for the year 1890. Presented 12th February, 1890. (*Printed.*) Estimates for the service of the Province, until the estimates for the year are finally passed. Presented 10th March, 1890. (*Not Printed.*) Supplementary Estimates for the year 1890. Presented 3rd April, 1890. (*Printed.*)

No. 20.. Report of the Fruit Growers' Association for the year 1889. Presented to the Legislature, 24th March, 1890. (*Printed.*)

No. 21... Report of the Commissioner of Public Works for the year 1889. Presented to the Legislature, 18th February, 1890. (*Printed.*)

No. 22.. Report of the Commissioner of Crown Lands for the year 1889. Presented to the Legislature, 12th March, 1890. (*Printed.*)

No. 23.. Report of the Department of Immigration for the year 1889. Presented to the Legislature, 7th March, 1890. (*Printed.*)

No. 24.. Report of the Ontario Agricultural College and Experimental Farm for the year 1889. Presented to the Legislature, 24th March, 1890. (*Printed.*)

No. 25.. Statement as to the disposal of the Revised Statutes of Ontario for the year 1889. Presented to the Legislature, 3rd February, 1890. (*Not Printed.*)

No. 26.. Return to an Order of the House of the eighteenth day of March, 1889, shewing the number of documents filed under the "Custody of Title Deeds Act" up to the first day of January, 1889, and the amount of fees received. And shewing also, the amount paid in each Registration Division for the necessary books as required under the Act. Presented to the Legislature, 4th February, 1890.—*Mr. Wood, (Hastings.)* (*Not Printed.*)

No. 27.. Return to an Order of the House of the 18th day of March, 1889, shewing the Township Municipalities in which the Act to impose a tax on Dogs and for the Protection of Sheep is in force; the number of dogs assessed in such municipalities; the number of sheep killed and injured, and the amount paid for the same by such municipalities for the years 1886, 1887 and 1888 respectively. Also, shewing the municipalities in which a by-law is in force for the assessment of dogs without providing for damages to sheep, and the number of dogs so assessed for the above years, respectively. Presented to the Legislature, 4th February, 1890.—*Mr. Dryden.* (*Printed.*)

CONTENTS PART VI.

No. 28.. Extracts and Statements respecting Bi-lingual teaching in Great Britain, the United States and Canada. Presented to the Legislature 17th February, 1890. (*Printed.*)

No. 29.. Orders in Council, made in the year 1889 under the Revised Statutes of Ontario, 1887, Cap. 224, respecting the Education Department. Presented to the Legislature 6th February, 1890. (*Not printed.*)

No. 30.. Regulations made or revised by the Department of Education during the year 1889. Presented to the Legislature 6th February, 1890. (*Not printed.*)

No. 31.. Statement of the Returns made by Municipalities under the Tile, Stone, and Timber Drainage Act, R. S. O., 1887, Cap. 39, for the year 1889. Presented to the Legisluture 6th February, 1890. (*Not printed.*)

No. 32.. Statement of the affairs of the Toronto General Trusts Company under the provisions of 35 Vic., Cap. 83, Sec. 13. Presented to the Legislature 6th February, 1890. (*Not printed.*)

No. 33.. Return to an Order of the House of the thirteenth day of March, 1889, shewing in detail the number of Public School teachers who have accepted the terms heretofore imposed in regard to the Superannuation Fund and have withdrawn one-half of the amount paid in. The number of teachers who

have not accepted the terms, and shewing to what purposes the sums not already withdrawn are devoted, or how funded. Presented to the Legislature 7th February, 1890. *Mr. Blythe.* (*Printed.*)

No. 34.. Copy of a Minute of the Department of Education respecting the study of English in those schools in which the French or German language prevails. Presented to the Legislature 11th February, 1890. (*Not printed.*)

No. 35.. Report of the Inspectors of Factories for the year 1889. Presented to the Legislature 14th February, 1890. (*Printed.*)

No. 36.. Report of the Inspector of Legal Offices for the year 1889. Presented to the Legislature, 3rd April, 1890. (*Printed.*)

No. 37.. Supplementary Return to an Order of the House of the fourth day of February, 1889, shewing the amount paid out from municipal funds, either by direct grants or remission of taxes, in each city, town, village or rural municipality in the Province of Ontario during 1887 or 1888, for the relief of poor and indigent persons, but not including any sum paid for the support of a House of Industry or similar institution; the number of indigents a permanent charge upon any municipality in 1887 and 1888, and the number of such indigents who received temporary aid from municipal funds in 1887 and 1888. Presented to the Legislature 18th February, 1890. *Mr. Clarke* (*Wellington.*) (*Printed.*)

No. 38.. Return to an Order of the House of the twenty-fifth day of February, 1889, shewing the name of the municipalities which have passed by-laws under the authority of the "Ontario Shops Regulation Act," distinguishing between cases where such by-laws were passed without petitions in favour thereof. And shewing also, the date of the passing of each such by-law; the class or classes of shops to which each such by-law applied; the hour at, and the period of the year during which the respective classes of shops were by the by-law required to be closed, and which of such by-laws have been repealed. Presented to the Legislature 18th February, 1890. *Mr. Morgan.* (*Printed.*)

No. 39.. Analysis of Reports of County, Township and Horticultural Societies for the year 1888. Presented to the Legislature 20th February, 1890. (*Not printed.*)

No. 40.. A brief history of Public and High School Text-Books authorized for the Province of Ontario, 1846-1889. Presented to the Legislature 26th March, 1890. (*Printed.*)

No. 41.. Report of the Inspector of the Elgin House of Industry for the year 1889. Presented to the Legislature 20th February, 1890. (*Not printed.*)

No. 42.. Copy of an agreement between the Inspector of Prisons and Public Charities and H. A. Nelson & Sons, relative to the manufacture of brooms at the Central Prison. Also, of Order in Council approved by His Honour the Lieutenant-Governor, the fifteenth day of June, A.D. 1889, authorizing the said agreement. Also, of agreement between the Inspector of Prisons and Public Charities and the Brandon Manufacturing Company of Toronto (Limited), relative to the manufacture of woodenware at the Central Prison. Also, of Order in Council approved by His Honour the Lieutenant-Governor, the thirty-first day of December, A.D, 1889, authorizing the said agreement. Presented to the Legislature 11th March, 1890. (*Printed.*)

No. 43.. Return to an Order of the House of the tenth day of February, 1890, shewing a copy of the Case submitted by the Minister of Education for the opinion of the Judges of the Chancery Division of the High Court of Justice, as to the true construction of certain provisions of the Public School Act relating to Separate School supporters. Also, the answers given by the Judges to the questions submitted by the Case. Presented to the Legislature 24th February, 1890. *Mr. Meredith.* (*Printed.*)

No. 44.. Copy of an Order in Council increasing the commutation of the Surrogate Court fees payable to His Honour Judge Ardagh. Presented to the Legislature 25th February, 1890. (*Printed.*)

No. 45.. Return to an Address to His Honour the Lieutenant-Governor, of the nineteenth day of February, 1890, praying that he will cause to be laid before the House, a copy of the Order in Council appointing W. H. Spencer Police Magistrate for parts of the Districts of Muskoka and Parry Sound, and fixing his salary or emolument, and of the Commission issued to him as such Police Magistrate. Presented to the Legislature 25th February, 1890. *Mr. Marter.* (*Printed.*)

No. 46.. Return to an Order of the House of the twenty-first day of February, 1890, shewing the amount of disbursements connected with the Registrar of Deeds office in the City of Toronto for the year 1889, as follows :—(*a*) To the City of Toronto. (*b*) To the Deputy Registrar. (*c*) To other clerks and assistants. (*d*) For other purposes. Also, shewing the gross earnings of the Registrar for the year 1889, and the total amount received by the Registrar for his personal use ; and also a statement of the expenditure, if any, rendered necessary in consequence of the creation of the second Registrar for the City of Toronto, together with a copy of the report of any committee, or sub-committee of the Council of the City of Toronto shewing the necessity for new buildings for the accommodation of the registry officers, books, papers, documents and like matter relating to said city. Presented to the Legislature 28th February, 1890. *Mr. H. E. Clarke* (*Toronto.*) (*Printed.*)

No. 47.. Bursar's statement of cash transactions of the University of Toronto for the year ending 30th June, 1889. Presented to the Legislature 3rd March, 1890. (*Printed.*)

No. 48.. Report of Robert H. Lawder upon the cultivation of the sugar beet in Ontario. Presented to the Legislature 4th March, 1890. (*Printed.*)

No. 49.. Report of the Dairy and Creamery Association of the Province for the year 1889. Presented to the Legislature 4th March, 1890. (*Printed.*)

No. 50.. Report of the Sheep Breeders' Association of Ontario for the year 1889. Presented to the Legislature 5th March, 1890. (*Printed.*)

No. 51.. Statement of the Returns forwarded to the office of the Provincial Secretary of all the fees and emoluments received by the Registrars of Ontario for the year 1889, made in accordance with the provisions of R. S. O., 1887, Cap. 114, Sec. 100, with which are contrasted receipts of the same nature in 1887 and 1888. Presented to the Legislature 5th March, 1890. (*Printed.*)

No. 52.. Return to an Order of the House of the nineteenth day of February, 1890, shewing the number and designation of School Boards in the cities, towns and incorporated villages in Ontario which have adopted the use of the

ballot at annual school elections under section 103 of chapter 225 R. S. O., with the number of School Boards in cities, towns and villages which have not adopted the ballot for such purposes. Presented to the Legislature 5th March, 1890. *Mr. Clarke* (*Wellington.*) (*Printed.*)

No. 53.. Papers and Correspondence respecting French Schools. Presented to the Legislature 6th March, 1890. (*Printed.*)

No. 54.. Return to an Order of the House of the twenty-eighth day of February, 1890, shewing in detail the amount, if any, paid out by the Crown on behalf of lots 83 and 84 in the 3rd concession south-west Toronto and Sydenham road, being a portion of the Mercer estate ; also, shewing the amounts received for the sale of the same, and copies of all correspondence relating thereto. Presented to the Legislature 10th March, 1890. *Mr. Blythe.* (*Not printed.*)

No. 55.. Return to an Order of the House of the twenty-eighth day of February, 1890, specifying the amount of debentures issued on the credit of the permanent fund of the University of Toronto under the authority of section 5 of chapter 231, R. S. O., the amount realized by the sale of such debentures and the buildings, for the erection or alteration of which the money thus raised has been appropriated, with the estimated cost of the work done, or to be done, on each building. Presented to the Legislature 11th March, 1890. *Mr. Balfour.* (*Printed.*)

No. 56.. Return to an Address to His Honour the Lieutenant-Governor of the twenty-eighth day of February, 1890, praying that he will cause to be laid before the House a Return of a copy of the Order in Council authorizing the erection of the building known as the Biological Building in connection with the University of Toronto. Also, of any resolutions, recommendations or memorials from the Senate or Board of Trustees, asking for the appropriation of money for this purpose out of the permanent fund of the University, and of any contract that may have been let for additions to the building not yet completed. Presented to the Legislature 11th March, 1890. *Mr. Balfour.* (*Printed.*)

No. 57... Return to an Order of the House of the twenty-eighth day of February, 1890, shewing the total attendance of students matriculated and non-matriculated of each sex in University College from 1880 to 1890 inclusive. The number of graduates who have during each of these years lived in the College residence. The number of graduates who retained their rooms in residence during 1888, 1889 and 1890. The receipts and expenditures for the year 1888 and 1889, including list of water, fuel and gas and what proportion of the interior of the building is devoted to residence purposes. Presented to the Legislature 11th March, 1890. *Mr. Wood,* (*Hastings.*) (*Printed.*)

No. 58.. Statement of Returns transmitted by Municipal Councils to the office of the Provincial Secretary of the several debts of the corporation as they stood on the 31st day December, 1889, in accordance with the provisions of Section 382, Cap. 184, R. S. O., 1887. Presented to the Legislature 11th March, 1890. (*Not printed.*)

No. 59.. Statement of Returns transmitted by Municipal Corporations to the office of the Provincial Secretary of the debentures issued by them up to the 31st day of December, 1889, in accordance with the provisions of Section 5,

Cap. 186, R.S.O., 1887. Presented to the Legislature 11th March, 1890. (*Not printed.*)

No. 60.. Return to an Order of the House of the third day of March, 1890, shewing the amount expended in the year 1883, in Killarney out of the appropriation for Colonization Roads, with the dates and items, and persons to whom, and purposes for which the moneys were expended. Presented to the Legislature 12th March, 1890. *Mr. Monk.* (*Not printed.*)

No. 61.. Return to an Order of the House of twenty-eighth day of February, 1890, respecting the claim of John Eden, of Aylmer, for work done in digging wells by direction of Coroner McLay in connection with the enquiry made by him as to the death of one Gilford Williams, who was supposed to have been murdered, and for a statement in detail of all expenditure incurred in connection with the said enquiry, shewing the persons to whom any moneys were paid, and the dates when and the purposes for which the same were paid or expended. Presented to the Legislature 11th March, 1890. *Mr. Meredith.* (*Not printed.*)

No. 62.. Report of the Inspector of Division Courts for the year 1889. Presented to the Legislature 14th March, 1890. (*Printed.*)

No. 63.. Report of the Inspector of Registry Offices for the year 1889. Presented to the Legislature 14th March, 1890. (*Printed.*)

No. 64.. Return (in part) to an Order of the House of the fifth day of February, 1890, giving the dates, number of acres, location or other description of each Free Grant made since the first day of July, 1857, under the authority of section thirteen of "The Public Lands Act," or the like section in force from time to time, with the names of the persons or corporations to whom each of these grants were made, with the purposes for which they were made. Also, all correspondence respecting these grants or any other grants applied for under the said section during the said period. Presented to the Legislature 19th March, 1890. *Mr. Creighton.* (*Printed.*)

No. 65.. Report of the Commissioners for Queen Victoria Niagara Falls Park for the year 1889. Presented to the Legislature 20th March, 1890. (*Printed.*)

No. 66.. Correspondence relative to the Accounts between the Provinces of Ontario and Quebec and the Dominion of Canada. Presented to the Legislature 20th March, 1890. (*Printed.*)

No. 67.. Return to an Order of the House of the twenty-eighth day of February, 1890, shewing the number of Counties in the Province of Ontario, in which the Temperance Act of 1878 was in force on the first day of May, 1885. The number of County Councils to which it was submitted, prior to the first day of May, 1887, a Resolution affirming the expediency of the appointment of a salaried Police Magistrate, in compliance with 48 Vic., Cap. 17, Sec. 1. The names of the Counties in which such resolution was carried. The names of the Counties in which such resolution was lost. Also, number of Counties in which Police Magistrates were appointed under 50 Vic., Cap. 111, Sec. 1. Presented to the Legislature 20th March, 1890. *Mr. McLaughlin.* (*Printed.*)

No. 68.. Return to an Address to His Honour the Lieutenant-Governor of the nineteenth day of February, 1890, praying that he will cause to be laid before the House a Return of all cases in which fines or penalties imposed by

any Court have been remitted, or proceedings for the recovery of them have been stayed by the action of the Executive Government, or any member thereof, and of all cases in which persons liable upon recognizances of Bail have been released from liability or the proceedings against them have been stayed by the like action, with the reasons for the action taken in each case and also for copies of all Orders in Council relating to the said matters. Such Return to include the year 1873 and to continue down to the present time. Presented to the Legislature 24th March, 1890. *Mr. French.* (*Printed.*)

No. 69.. Report of the Master of Titles for the City of Toronto and County of York, under the Land Titles' Act for 1889. Also, Return of Fees received by the Master. Presented to the Legislature 25th March, 1890. (*Printed.*)

No. 70.. Return to an Order of the House of the eleventh day of February, 1890, shewing the dates in each year from 1884 to 1889, both inclusive, on which the Legislative Assembly of Ontario was convened and prorogued respectively. The dates during each Session of the Legislative Assembly on which all the several reports printed by order of the Legislative Assembly were presented during the same years. Presented to the Legislature 26th March, 1890. *Mr. Clancy.* (*Not printed.*)

No. 71.. Return to an Address to His Honour the Lieutenant-Governor, of the twenty-first day of March, 1890, praying that he will cause to be laid before the House a Return of copies of any correspondence between the Ontario and Dominion Governments, or between the former and any Corporation or person, relating to the ownership, sale or lease of the Dundas and Waterloo macadamized road, together with copies of any papers in the possession of the Government relating thereto, subsequent to that already brought down in the year 1886. Presented to the Legislature 26th March, 1890. *Mr. McMahon.* (*Not printed.*)

CONTENTS PART VII.

No. 72.. Report of the Provincial Board of Health for the year 1889. Presented to the Legislature 28th March, 1890. (*Printed.*)

No. 73.. Return to an Order of the House of the twelfth day of March, 1890, of a copy of the Judgment pronounced by the Honourable Mr. Justice Robertson, in an action in the High Court of Justice, wherein John J. Gosnell is plaintiff and Isaac Swarthout and others are defendants, and copies of all correspondence between the License Commissioners for the East Riding of the County of Kent, and the Provincial Secretary or any other member or officer of the Government on the subject of the granting of the licenses which were in question in the said action. Also, copies of all minutes of the Commissioners, with regard to the granting of said licenses, and all reports relating thereto. Presented to the Legislature 28th March, 1890. *Mr. Meredith.* (*Printed.*)

No. 74.. Return to an Order of the House of the nineteenth day of February, 1890, shewing what applications have been made for payments out of the Consolidated Revenue under the provisions of Section 4 of Chapter 4, 43 Victoria, in respect of the dues on pine trees. Also, shewing what is the aggregate sum which, up to the first day of February last, the patentees of lands, subject to the provisions of the Act, are entitled to receive out of the dues collected on pine trees cut after the date of their patents. Presented to the Legislature 28th March, 1890. *Mr. Marter.* (*Printed.*)

No. 75.. Return to an Address to His Honour the Lieutenant-Governor of the twenty-first day of March, 1890, praying that he will cause to be laid before the House, copies of any papers, memorials or petitions addressed to the Lieutenant-Governor in Council, or to any member of the Government, since the late partial destruction of the Provincial University building, for or against the maintenance of a residence in connection with that institution. Presented to the Legislature 31st March, 1890. *Mr. Balfour.* (*Not printed.*)

No. 76.. Report of the Poultry Association of Ontario for the year 1889. Presented to the Legislature 31st March, 1890. (*Printed.*)

No. 77.. Report of the Eastern Ontario Poultry and Pet Stock Association for the year 1889. Presented to the Legislature 31st March, 1890. (*Printed.*)

No. 78.. Report of the Ontario Bee-keepers' Association for the year 1889. Presented to the Legislature 31st March, 1890. (*Printed.*)

No. 79.. Return to an Address to His Honour the Lieutenant-Governer of the twenty-first day of March, 1890, praying that he will cause to be laid before the House a copy of a Petition presented to His Honour the Lieutenant-Governor from the Municipal Corporation of the Village of Cayuga, relating to the Grand River Navigation Company. Also, for a copy of all correspondence relating thereto. Presented to the Legislature 31st March, 1890. *Mr. Harcourt.* (*Printed.*)

No. 80.. Report of the Bureau of Industries for the year 1889. Presented to the Legislature 1st April, 1890. (*Printed.*)

No. 81... Papers and Documents relating to the Ontario and Rainy River Railway Company and the Ottawa and Parry Sound Railway Company. Presented to the Legislature 2nd April, 1890. (*Printed.*)

No. 82.. Documents and papers relating to the Upper Canada Improvement Fund. Presented to the Legislature 2nd April, 1890. (*Printed.*)

No. 83 . Return to an Order of the House of the fifth day of March, 1890, shewing in tabulated form a statement of Provincial Revenue from all sources, for each year since Confederation to the close of 1889, specifying such annual receipts under the various headings used in the Public Accounts of the Province. A similar statement of Provincial expenditure during the same period. Presented to the Legislature 2nd April, 1890. *Mr. Clarke,* (*Wellington.*) (*Printed.*)

No. 84.. Report of the Secretary and Registrar of the Province for the year 1889. Presented to the Legislature 2nd April, 1890. (*Printed.*)

No. 85.. Return to an Order of the House of the fifth day of March, 1890, shewing the amount still to be paid on Railway Aid Certificates issued by the Province, with the dates when the same became due and payable. Also, shewing the amounts of Annuity Certificates issued by the Province with the dates when they become due and payable. Also, an Estimate of the present value of the said Railway Aid Certificates and Annuity Certificates respectively. Also, specifying the amount to be paid on account of principal and interest respectively in each year during the currency of said Certificates. Presented to the Legislature 2nd April, 1890. *Mr. Balfour.* (*Printed.*)

No. 86.. Return to an Order of the House of the twenty-eighth day of February, 1890, shewing the number of Shop and Tavern Licenses granted to persons resident in Killarney in each of the years 1888 and 1889 and the names of the persons to whom they were respectively granted. Also, for copies of all petitions for or against the granting of such licenses or any of them, and of all correspondence between the head, or any officer of the License Branch of the Department of the Provincial Secretary, and any other person on the subject of the granting or working of such licenses, or any of them, and shewing also, the population of Killarney during the same years. Presented to the Legislature 2nd April, 1890. *Mr. Meacham.* (*Not printed.*)

No. 87... Report of E. B. Borron, upon the resources of the northerly part of the Province of Ontario and his explorations therein. Presented to the Legislature 7th April, 1890. (*Printed.*)

EIGHTH ANNUAL REPORT

OF THE

PROVINCIAL BOARD OF HEALTH

OF ONTARIO,

BEING FOR THE YEAR 1889.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

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1890.

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EIGHTH ANNUAL REPORT

OF THE

PROVINCIAL BOARD OF HEALTH.

To His Honor Sir Alexander Campbell, K. C. M. G.,

Lieutenant-Governor of Ontario.

May it please Your Honor :

In presenting to you its Eighth Annual Report the Provincial Board takes pleasure in informing Your Honor that another year has passed without the presence in any widespread epidemic form of those pestilences which, as smallpox and cholera, have from time to time in years past appeared in Ontario ; and the Board has further to state that an unusual immunity from those contagious diseases, which are endemic to the Province, has marked the year that has just closed.

In the report of the Secretary to the Board, following this introduction, you will find the few small outbreaks which have occurred referred to in detail ; and in regard to the lessons which we may learn from the record of these outbreaks I would respectfully draw the attention of Your Honour to two needs to which they point. The first is the desirability of having impressed upon the public, in our urban and village municipalities especially, the necessity there is for erecting what has been found to be economically quite possible, Isolation Hospitals or "Houses of Recovery" to which cases of contagious disease can be removed, along with the mother or nurse if desirable, and there be attended by the family physician. Conclusive evidence is adduced from cities in this Province, as also from abundant experience in England, to show that the safety of the patient is thereby best guaranteed, the freedom from exposure of the rest of the family fully accomplished, and the cost of such outbreaks very materially lessened both to the affected family and the municipality. The second need is a more strict attention on the part of local health authorities, and the general public to the advantages to the public health gained by a strict attention to the law requiring the notification of the Medical

Health Officers of any outbreak of contagious disease which occurs, thereby making a removal of diseased persons by the Local Board from infected and unhealthy premises possible, and giving such officers an opportunity for investigating those local causes tending to the production of such diseases.

It is most satisfactory to note from the review of the subject contained in the Secretary's report the great progress which municipal sanitary authorities are making in matters of public water supplies and sewerage systems.

These works are especially indicative of an advance in municipal knowledge of the needs belonging to aggregations of people in urban communities, and in the executive ability required to set in operation such public works as these necessities demand.

Nothing, however, is more valuable as seen by the reports of Local Boards and the *resume* of the Board's operations by the Secretary, than the broadening field which yearly is opening up for the work of the Provincial Board. Animal diseases received last year a large share of the Board's attention; pests, such as the 'moth pest' are being carefully investigated, and the geological and biological relationships which affect the amount and character of our water supplies are becoming increasingly prominent portions of the Board's work, as the facilities for investigating and collecting information regarding them grow in extent and definiteness.

The development of this scientific and executive work on the part of the Board is most desirable, and is wholly in the direction in which such Boards as the Local Government Board of Great Britain, and those of the most advanced continental countries have been diligently directing their work for a number of years past. Massachusetts, Illinois, Minnesota, Michigan, and all those neighboring states most advanced in sanitary work are directing their energies in this direction, and the needs of the Province and its reputation for progress equally require that increasing attention be given to the work of scientific investigation of disease.

Your Honor will find from the reports of Local Boards in the Appendix that these organizations are extending and that they are readily seconding the efforts which the Provincial Board of Health is making by taking prompt action in those instances whereever threatening epidemic diseases appear, or where nuisances of an aggravated character become a menace to the public health.

In conclusion we commend the work of the Board, partaking so largely of a benevolent and philanthropic nature, to Your Honor's distinguished consideration and feel assured that the same support and approval given in the past by your government will be maintained and increased in the future.

I have the honor to be,

Your obedient servant,

FRANCIS RAE, M.D.,
Chairman.

REPORT OF THE SECRETARY.

To the Chairman and Members of the Provincial Board :—

GENTLEMEN,—In recalling to your remembrance the events which have taken place in the history and work of the Board during the year 1889, while it would be the natural order of procedure to refer first to those matters of a general character, affecting the Province at large, yet I am certain that I shall be pardoned if, before passing to these general matters, I refer to those personal losses, which in common with yourselves I have suffered, in the removal by death of those two, our dear friends and colleagues, Dr. Horace P. Yeomans, of Mount Forest, and Dr. Hugh M. Mackay, of Woodstock. To the words of the resolutions adopted at the quarterly meeting succeeding their sudden and unlooked for deaths, I can add nothing but desire to embalm them in this volume of the Board's proceedings, as a fitting tribute to the memories of these, the first two gentlemen whom death has taken from its roll of membership since the Board's formation ; and I doubt not that to those of us who are left and to others who may come after, this testimony to the worth of two such men, thus removed, may serve as a stimulus whereby their virtues may be emulated.

Moved by Dr. Covernton, seconded by Dr. Cassidy : That the recent lamented death of our esteemed colleague Dr. Yeomans calls for the expression of the deepest sympathy of the members of this Board, who from its first creation by the Provincial Government of Ontario have experienced the greatest pleasure in the frequent intercourse that the work of the Board afforded them for gaining an intimate knowledge, not only of his great worth as a man, but also of his professional acquirements which were of the highest order.

His pleasant, genial manners, aptitude in debate and experience in municipal law, were of the greatest possible assistance to his colleagues, and during the period of eight years he was ever found to be a careful and intelligent co-worker in the trust committed by the Government to the members appointed for the special purpose of diffusing among the people of our Province a knowledge of the sanitary precautions requisite for guarding the people from the spread of infectious disease.

The great ability and scholarship displayed by Dr. Yeomans while associated with other members of the Board in preparing a manual of hygiene specially intended for teachers, scholars, and the general public, were particularly conspicuous. Our lamented friend it may also be mentioned took more than ordinary interest in the "hygiene of schools," every needed particular of which was most carefully studied by him as was instanced in an admirably written essay on this subject, read on the occasion of the Twelfth Annual meeting of the American Public Health Association convened in the month of October, 1886, in our City of Toronto, the terse but yet thorough treatment of this subject being most highly commended by the members of the Association assembled from every State of the Union, as also from the different provinces of the Dominion of Canada, which paper was subsequently published in the twelfth volume of their Transactions. Into various inquiries as to the causes of outbreaks of disease in different parts of our province, that were from time to time assigned to him, the same searching and patient spirit of investigation was uniformly displayed. In the sudden loss of so valued a colleague we fully recognize what this painful deprivation of so loving a husband and father must be to the bereaved widow and family, to whom the members of this Board respectfully desire to tender their deepest sympathy and request the secretary to send a copy of this resolution to the family of our deceased confrere.

Moved by Dr. Covernton, seconded by Dr. Macdonald, and resolved :

That the Provincial Board of Health having heard with deep regret of the death of Dr. Hugh M. McKay, one of its members, takes this the first opportunity to express its sincere sorrow at his unexpected removal. His friends and coadjutors of the Board beg to convey to his widow and family their warm sympathy in their affliction. Dr. McKay's genial disposition had endeared him to his associates in the Board, while his professional attainments, and his ready zeal in the duties incidental to his position had impressed them with the utmost esteem for their deceased friend as an accomplished physician and a helpful officer. In the presence of the greater family affliction the Board will not venture to speak of its own loss by the removal of two of its youngest and most active members, but in their absence it will miss esteemed friends and earnest fellow-labourers.

Integer ævi ! The despatches said,
" Worn out physicians ! " Two now lie dead :
Died in their prime,—yet a wide influence won !
A breath from th' Unseen—and earth's work is done !

Integer mentis ! To the very last,
So our letters run, life's stream coursed fast ;
Clear brain, firm hand newed close to the line :
Earth's frail bands are burst ; now free, they're Divine !

Integer vitæ ! So in sadness we
Speak of them, as gazing out to sea
We watch the dark barge vanish, with the dead :
'Tis the life that speaks. All unsaid is said !

1. Municipal Health Progress.—The work of the Board during the year which has closed has again been marked by a steady progress in what most especially tends to develop internal sanitation in all that pertains to preventing disease and removing causes already in existence. The progress of municipal sanitation, aided incidentally by the accident of epidemic outbreaks of disease, is however to be looked for with an increasing knowledge of the causes of disease, in every community marked by a progress in education and commerce ; and it might perhaps be said that advanced municipal sanitation may be taken as the most accurate of all methods for estimating the degree of the social evolution of any community. So-called education may be but the repetition of mediæval scholasticism, without any direct bearing upon the practical problems of daily life ; commercial activity may be developed along lines based upon unsound economic principles, but wherever the health of the citizen is preserved and improved, by the restriction of contagious disease, by the returning of effete matters to the soil for replenishing its exhausted stores of plant food, or by supplying to every citizen an abundance of wholesome water and food, an advance in the personal, social and industrial progress of a community is the necessary and inevitable result. Such work has, in a special degree marked the history of the past year of public health work in the Province. Remembering as we must, the special conditions which have for several years affected the progress of the individual communities going to make up the 700 municipalities of the Province, it is a matter of agreeable surprise to find how in many instances, under circumstances other than favorable, municipal sanitary improvement has more than kept pace with commercial progress.

The period since the creation of a Provincial Board of Health in Ontario has been marked by several conditions unfavorable to the consideration of large schemes of municipal improvement. During 1881 and for several years since, an internal movement of population amongst the rural municipalities has resulted in an actual loss of population if we take one per cent. as the natural annual increase of a population not affected by any special causes as war or pestilence. This depopulation has consisted in large measure of the active workers of the community, viz., the young farmers, who have gone to the North-West or elsewhere to settle upon new lands. How great is the influence thus exerted on the municipal evolution of every community need not be discussed ; but its sequence is seen in the fact that little less than one-fifth of the whole agricultural lands of the Province are in the hands of tenants who pay less than five per cent. on the marketable values of

the whole cleared lands. When we further add to this the fact that prices of many farm products have steadily declined during this period and that the average yield of most grain-crops has also fallen off, it seems little short of wonderful that municipal health organizations should have attained a status in these years, such as to practically enable us to say that every township discusses with some degree of care, the problems of the public health.

It is apparent, as we have said, that these years have marked a transition period in the history of the Province, which it is to be hoped, with changing methods of agriculture, such as the development of cattle-raising, dairying, etc., will create an increased production of wealth—even though the population do not increase.

Having stated these facts, it is interesting to turn to the records, found in the published reports of Local Boards in Appendix, and see what these Boards have been doing.*

It is further worth while to observe how in spite of the fact of the very slight increase in population in most urban municipalities we have the most marked evidences of an advance in municipal organization and appreciation of the principle which underlies social progress—that there are many matters which tend towards individual progress, comfort and health which can be much better accomplished by co-operation, whether by what are called mutual benefit societies or by that represented by municipal government. In spite of sociologists who teach the doctrine of individualism, we find that in England, the home of such theories, municipal government has reached an almost ideal development, and we have had recently set forth in the new Local Government Bill, provisions whereby matters of minutest detail, having a direct bearing upon the general or social welfare, are provided for.

The Local Government Act of 1888 is remarkable in the extent to which the powers laid upon it go. Primarily its object was the establishment in every county of a council to whom should be entrusted the management of the administration and financial business of the county. The council has a chairman, aldermen and councillors elected for three years. There are 616 counties based upon a minimum population of 50,000, *i.e.*, towns or boroughs of 50,000 or over, may have separate organization. Amongst the public health powers are the enforcement of the Rivers Pollution Prevention Act (1876) London is a county for the purposes of this Act. They may make by laws for the prevention and suppression of certain nuisances and they may appoint a medical officer of health.

They may sub-divide and alter sanitary areas within their boundaries, subject to approval by the Local Government Board. Powers to purchase compulsorily, subject to the approval of the same authority, for sanitary purposes is likewise given to these councils; while the Local Government Board may constitute for special purposes all the councils administering along a river or a portion of a river for sanitary purposes.

The Local Government Board has further power to prescribe the qualifications and duties of a medical officer of health and also regulations in regard to the appointment, salary and tenure of office of a medical health officer.

Section 18 of the Act dealing with appointments such as the above provides that after 1st April, 1889, no person can be either medical officer of health or his deputy for any district in the metropolis without being qualified to practice medicine, surgery or midwifery, and that after 1st of January, 1892, no person can be appointed to either of the above positions unless in addition to above qualifications he is registered in the Medical Register as holding a diploma in state medicine, or has been during three consecutive years a medical officer of health, or a Local Government Board inspector.

Now if we compare the multifarious subjects which are legislated upon by our Provincial parliament, with the powers and duties laid upon the county councils under the Local Government Act, it may be said that apart from the larger constitutional questions, there is a close analogy between the legislation to be carried out by the Local

* See Local Boards for Townships on page 60.

Legislature and the county councils under the Local Government Act, for it must be remembered that it is not territory but the needs of the people of any community which must be provided for ; and the density of population in some Local Government districts is comparable to that of our Provinces. The same differences indeed are to be seen in different provinces of Canada, for whereas in Ontario, township government is useful in older settled districts, yet a union of townships has been found convenient in newly settled districts, and county boards are found sufficient in Manitoba.

a. Public Waterworks.—Reverting to the work of urban districts in public health matters, it is interesting to note in how many places the need of a public water supply has made itself felt, and how in numerous instances active steps have been taken to supply the want.

Thus the following imperfect list shows how progress in this work is being made, since public waterworks have been constructed in each.

Belleville.	London.	St. Catharines.
Berlin.	Merritton.	St. Thomas.
Brampton.	Milton.	Sarnia.
Brantford.	Mitchell.	Seaforth.
Brockville.	Morrisburg.	Stratford.
Cobourg.	Niagara Falls.	Tilsonburg.
Cornwall.	Orangeville.	Tilbury Centre.
Dundas.	Ottawa.	Toronto.
Goderich.	Owen Sound.	Uxbridge.
Guelph.	Paisley.	Welland.
Hamilton.	Paris.	Wiarton.
Iroquois.	Picton.	Windsor.
Kingston.	Port Hope.	Wingham.

b. Sewerage and Drainage.—Following as a necessary sequence to a public water supply is the construction of a system of sewerage. In this it may fairly be said that if the same progress has not been made as in the matter of public water supplies, a progress equal to if not greater than in any other state on the continent is seen. Thus we have systems of sewerage in

Constructed.		Under Construction.
Barrie, (partial).	Niagara Falls, (partial).	St. Thomas, (partial).
Belleville.	London.	Tilsonburgh.
Brantford.	Ottawa.	Toronto.
Brockville.	Peterboro', (partial).	Windsor.
Hamilton.	Port Arthur.	Woodstock, (partial).
Kingston.	St. Catharines.	
Lindsay,(partial).	St. Thomas.	

However partial or imperfect these systems may be, it is indeed gratifying to note that through the labors of this Board and the development of the work of the Local Boards, both greatly aided by the active work of the Association of Executive Health officers, the progress being made is along the lines of the most approved modern methods of sanitation. To illustrate by a single case, which might serve as a model for all other towns and cities, the case of the City of Brantford may be cited. In 1888 the question of a public water supply was strongly urged, and as may be seen from the report of its Local Board for that year, a strong argument was found in the large number of cases of enteric fever which had prevailed. A careful investigation of the several possible sources of supply was made, and a selection of the source for a public water was made. During 1889 the works were carried forward and completed at a cost exceedingly satisfactory to the city.

The necessity for dealing with the sewage of the city, at once became apparent; and a steady and persistent agitation for the construction of sewerage works has since been carried on. In view of the fact that the water works were still under construction, the city might have been fairly excused for delaying the consideration of another scheme pointing to an expenditure of large sums of money. Yet owing largely to the persistent presentation of the most modern and at the same time economical method—the separate system—by the Local Board, and its Medical Health officer, surveys and a complete plan, making provision for the disposal of the sewage have been endorsed by the people, and measures looking to its immediate construction are being carried out. The annual report of the Local Board outlines the plan very fully; and what is there found may well serve as a basis of action for other places where such schemes are under consideration.

c. Soil Drainage.—In connection with the sewerage systems of towns in Ontario in almost every instance of which we are aware, a most important point bearing upon the healthfulness of houses has been neglected, viz: the matter of sub-soil drainage. Oddly enough, while the principle of sub-soil drainage has been carried into practice to a considerable extent throughout the Province, with a view to the healthy growth of plant life, and while extensive operations in western districts have been undertaken with a view to the reclaiming of drowned lands, there has been an almost total ignorance—or at any rate an ignoring—of the principle in its relation to human life in the sanitation of our towns and cities. Every where, almost, that sewers have been constructed there seems to have prevailed the idea that once a glazed tile for carrying house sewage, with storm, water and cellar drainage, has been laid, every necessary precaution has been made for subsoil tile drainage. Yet a moment's consideration will cause everyone to see that a close-jointed sewer pipe laid in a tenacious blue clay such as that underlying Toronto will scarcely at all aid in the sub-soil drainage of the extensive area of the city; and yet I do not think I am wrong in stating that in no instance during the many miles of sewer pipes laid in this city during the past five years has any provision been made for carrying off subsoil waters. How great the necessity for this is, may be seen in the fact that for the proper drainage of soils and the lowering of ground waters for farming purposes, main tile drains and laterals varying from 5 inches to 2½ inches diameter, are systematically laid at intervals not exceeding usually 60 feet. Similarly in the report of the engineer for Brockville, we find that two five inch field tile drains laid in the same trench and at the depth of the street sewer are necessary to properly convey away subsoil water and cellar drainage.

Not to mention the first immediate benefit in draining cellars and keeping house foundations dry, an incidental and notable advantage is gained in road-making, since by these deep subsoil drains a most effective means is employed for keeping dry the road bed. This very fact alone would be found of immeasurable value in preventing the rapid destruction of block pavements and asphalt, on the one hand by preventing hoisting with the frost and on the other in the case of block pavement by a retardation of the decay which is found to so rapidly destroy them. This dampness of soil as a cause of disease has been recognised but in no case better illustrated than by Dr. Buchanan, chief officer of the Local Government of Great Britain, who has pointed out that sewerage and drainage had most notably lessened the mortality from consumption in English towns. Thus in Salisbury the death-rate was thereby reduced by 49%, at Ely, 47% and at Rugby, 42%. It has similarly been shown from Ontario mortality returns that this disease caused in the Niagara peninsula, a flat district with heavy clay soil, in the same year 12.7% of the total deaths, or 1.64 per 1000, while in the upland central plateau district, it caused but 8.5 of the total deaths, or 1.2 per 1000 of population.

It must therefore appear from the standpoints both of economy and sanitary improvements that we are seeing a most notable advance in the methods by which the public health of our cities, towns, and villages is being promoted through the construction of systems of sewerage, whereby their effete materials are removed from that proximity to dwellings which causes them to be of all causes the most serious menace to the health of our people.

d. Inspection of Food Supplies.—Turning to another subject peculiarly belonging to the functions of municipal sanitary administration, it is interesting to note the immense strides which have been made in the supervision of the food supplies of our communities.

The matter of slaughter-houses and public abattoirs has been dealt with in several reports by committees of the Board during the several years since 1887, and legislation dealing with public milk supplies, whether as supplied directly as milk for drinking purposes or as butter and cheese, has been passed by the legislature. It will be remembered that as an outcome of this legislation, a circular letter dated Nov. 1888, was addressed to the Local Boards of Health in which a form of regulation regarding milk vendors and the inspection of milk was recommended to their attention. In the report for 1889, a tabular statement was given, showing as far as possible the extent to which the inspection of dairies, dairy cattle, and milk supplies was carried on. While the form of regulation differs slightly in different municipalities with the powers given under section 113 Public Health Act, it will be found that they are all closely in accord with the views of the Board and the medical officers of health, as set forth in their reports before the Association of Executive Health Officers.

It has been with pleasure that we have observed the large amount of technical skil[1] which during the two past years has been devoted to this subject by the chief analyst of the Department of Inland Revenue. He has been unceasing not only in making public the most practical and exact methods for making analyses of milk, but he has further labored to establish a standard which may be generally accepted, whereby first-class milk may be known. Much, however, remains to be done in the work of determining the variations in quality which milk undergoes in animals of different breeds, with different kinds of foods, and hygienic surroundings and treatment as affecting the health of cows, and yet more in the care and treatment which the milk receives after it has been taken from the cow. Towards this latter branch of the work, of even greater importance to the public health than the first, the attention of every officer of health must be persistently and assiduously devoted. However lacking in the elements of richness the milk of a badly treated and poorly fed cow may be, it may be stated generally that, if not diseased she is likely to yield a wholesome milk. But from the moment that the milk is drawn and becomes exposed to external influences, it is placed in a wholly different category. If a water taken from the ordinary well contains invariably microbes of different species, it is much more certain that a milk placed in vessels washed by such water, unless when boiled is at once inoculated by such bacteria as it contains. Add to this the different atmospheres to which it is exposed from that of the stable to the kitchen or cellar in which it is kept prior to consumption, and we gain some adequate idea of the dangers of serious contamination to which it is exposed. Medical officers of health may fairly be excused if they should appear to be cranks on such a subject. Their teaching on the subject of cleanliness as regards milk may well be incessant; by circulars distributed to householders, by frequent examinations, not only of the butter fat, but also of the dairies and their surroundings, their water supplies, the places where the milk is stored, the cans and other vessels in which the milk is kept, and by following it into the very hands of the consumers, they will gain such information and convey such lessons as will produce results of untold benefit to the consumer and to the health of the whole community.

The reports resulting in legislation with a view to the prevention of adulterated and unwholesome milk being supplied to dairies have already been referred to. This may be considered as supplementing the provisions provided in the by-law known as Schedule A of the Public Health Act. To this was added in 1887, as an amendment to the Public Health Act, the provision contained in Section 65 for the periodical inspection of dairy cattle by a competent veterinarian.

A serious defect has, however, existed in this legislation from the fact that it is nowhere definitely stated what diseases in cattle constitute unsoundness within the meaning of Section 99 of the Public Health Act, by which power is given to a medical health officer

or sanitary inspector to inspect and seize all unsound animals, meat and milk in preparation for sale or exposed for sale.* The bill (No. 61) introduced into the legislature this year will serve in a large measure to remove the difficulty, and it may confidently be expected that with such powers for investigation and action as therein provided, greater care will be taken in the prevention of disease and in the treatment of diseased animals, and, undoubtedly, great benefits to the general public will result by their being protected against the injurious results arising from the use of meat and milk of diseased animals, while far-reaching benefits will accrue owing to the lessened dangers of breeding from weakly and diseased animals.

What we especially require and look for are increased facilities for the examination of meat and milk, and the extension of accurate knowledge regarding the clinical and pathological appearances of disease in the prime necessaries of life.

That these matters are regulated with care in other countries to the great benefit of the public has before been pointed out; while as an illustration of this it may be stated, as quoted from the Local Government Board's (England) last annual Report, "Milk continues to be the chief subject of analysis, out of 26,344 samples of various articles of

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*An Act to amend the Public Health Act in respect to the Sale of Milk and Meat from Animals affected with Tuberculosis.

HER MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:—

1. Section 99 of *The Public Health Act* is amended by adding the following sub-sections thereto:— Rev. Stat. c. 205, sec. 99, amended.

(3) Whenever a medical health officer from his own knowledge or from information received from a veterinary surgeon or other qualified person has reason to believe that any animal or the meat or milk of any animal is affected with any contagious or infectious disease named in section 2 of *The Animal Contagious Diseases Act*, chapter 69 of the Revised Statutes of Canada (1886), he may take action as provided under sub-section 1 of this section. Medical health officer to take action when aware of disease in animals, meat or milk.

(4) Any officer of the Provincial Board of Health may similarly, at all reasonable times, carry out any of the provisions contained in this section. Officers of Provincial board may act.

(5) The owner or other person having charge of any animal or meat, or milk of any animal affected with the said diseases, who knowing the nature of the disease, shall hold the animal or its meat or milk for human food shall be liable, upon conviction before a police magistrate or two justices of the peace, to a fine not exceeding $50 or less than $5 and costs; and the burden of proof that the animal, meat or milk was not intended for human food or to be sold for human food shall rest with the person charged. Penalty for keeping diseased animals or meat, or milk for sale as food.

(6) Any person who gives such information to a health officer or shall make such complaint to a justice of the peace as shall lead to the conviction of any person for a breach of the provisions of this section shall be entitled to receive one-half of the penalty imposed upon the person so convicted, and the other half of the penalty shall be paid to the municipality in which the offence was committed. Half of penalty to be paid to informer.

(7) Upon any prosecution under sub-section 5 of this section it shall be competent for any medical health officer to make or cause to be made or request the Provincial Board of Health to make, at the cost of the municipality, such scientific examination of the animal, meat or milk suspected of being deseased as may enable the court to determine whether or not such diseases exists; and the Minister of Agriculture may instruct the secretary of the Board or other person acting under the board to make such investigation, and the expenses of such investigation shall be supplied out of the moneys set apart by the Legislative Assembly for the investigation of contagious diseases. A fee, which shall not in any case exceed $10, shall be payable for the examination of any tissue, meat or milk under the provisions of this sub-section. Scientific examination of tissue meat or milk upon prosecution.

food, drink and drugs, no less than 10,859 were of what professed to be milk, of which 11.9 per cent. were condemned." "While in one of the London districts, St. Pancras, out of 129 samples, no less than 55, or nearly 43 per cent. were condemned."

The following instance illustrates the enormity of the crime of adulteration and the inadequacy of the fine to prevent adulterating:

"In another case in which the vendor of milk stated that he rarely sold more than a farthing's worth at a time, the sample taken was found diluted with 15 per cent. of water, but the magistrate considered that one shilling was an adequate fine. On this decision the public analyst comments as follows:—"It is these small portions of milk which are used to fill the bottles of young children, and are often diluted by the parents after the purchase, and thus it is impossible to say how weak the milk becomes before the same is used, but it is not very difficult to understand why the mortality amongst the children of the poor is so great."

e. Abatement of Nuisances.—Associated very closely with the question of sewage disposal, which we have already referred to, is the matter of nuisances, commonly the result of defective measures for the removal of solid organic matters, whether in the shape of excreta or the numerous refuse products incidental to the habitations of men everywhere, but chiefly in those places where aggregations of populations exist. That it is not, however, alone where aggregation of population is present, is seen in the fact that around the poorer class of farmhouses garbage heaps and even manure heaps are allowed to accumulate to a degree seldom reached in the most thickly populated towns. It might, perhaps, be said, however, that the places where nuisances become most general are in the villages and in smaller towns, where municipal sanitary organization has not proceeded much beyond the first stage of organization of Local Boards of Health.

For the most part sanitary arrangements are individual to each premises. With the never absent outdoor privy-pit there is usually associated a wooden drain leading the slop waters from the kitchen, and this becoming choked creates the most dangerous of nuisances. But this evil grows in such places on their assuming the appearance and status of a town; dwellings are erected contiguously as stores along a main street and sheer necessity forces the construction of a wooden box drain to the nearest water-course. Here and there some hotel or bank building connects with this and by hand-pumped water to a tank attempts the supply of plumbing conveniences and causes extended pollution of a drain which cannot be properly flushed, and, even if it could, is not except in the most accidental way by rains falling irregularly. Such nuisances, we may fairly conclude, are being year by year more readily and thoroughly dealt with as Local Boards learn to recognize the powers and duties laid upon them and increase in a knowledge of the means by which such evils can be remedied. Illustrations of this class of nuisances may be found in correspondence from Niagara-on-the-Lake, Exeter, Cannington, Newmarket, Brownhill, Waterloo, Tottenham, Stratford, Seaforth, etc., and will be found referred to in the annual reports of these Boards.

To the end of removing this class of nuisances every effort must be made by officers of health, whether provincial or local, to educate Local Boards in the methods, which by the application of the principles involved in the "separate" system of sewerage makes the dealing with sewage in a scientific manner a possible thing for every hamlet, and even for every household. Reference was made fully, in the Report for 1888, to the sewage farm, now in successful operation at the London Asylum, whereby the sewage of a population of 1,000 persons is being most successfully dealt with.*

*The following note from Dr. C. N. Beemer, of the medical staff, in answer to a letter asking how the farm had done its work during the winter is of interest:—

My Dear Bryce,—What do you mean by "during the cold weather?" we have had none this winter in this vicinity, and the test to which we expected the sewage farm to be subjected during the present winter season has not yet been applied. There has been no accumulation of sewage to speak of, though a few times the time for clearing off the ditches was about four days. Whenever a few inches of snow have fallen on the dry ditches, and subsequently the sewage has

In Col. Waring's work on "Sewerage and Land Drainage," just published, he states that "in a closely built street with occupied twenty-five foot dwelling houses on both sides of the way, and with cross streets 80 feet wide every 400 feet, a six-inch sewer having a fall of 1 to 200 will not run half full until it has reached a length of3,600 feet, the sewage being equal to 60 gallons per day per head of population, one-half of which is discharged in eight hours." Now, according to data given by Waring compared with those in the report of Mr. Willis Chipman, C.E., regarding the cost of nine-inch sewers in Brockville, the cost of construction in a soil where no rock excavation is necessary of a six inch sewer, including flush-tanks, would be about $5,000 per mile. This would mean, at 5 per cent. interest, $250 per year. Can any, even the smallest village, any longer claim that there can be any reason for the maintenance of a nuisance in connection with house drainage. But when it is further realized that with the intelligent expenditure of a comparatively few dollars every house with a garden attached can dispose of the sewage from wash tubs and sinks and even from water closets and baths, when water is pumped either from cistern or well to a tank in the attic, the excuse for maintaining any longer deposits of refuse under or about a house becomes ridiculous. This can be done by a tank, best made of brick set in concrete, but where less expense is demanded two-inch plank tongued-and-grooved will serve every purpose. It is well that the tank have two compartments and that the sewage pass from No. 1 to No. 2 by a T pipe drawing off the sewage from below its surface to prevent grease passing over. In No. 2 compartment is placed a tumbling-basin which receives the liquid sewage and is at intervals emptied automatically. From this the sewage passes into a system of sub-surface field tile drains placed some twelve inches below the surface and having a capacity about equal to that of the tumbling tank. The sewage passing out into the soil is there subjected to the decomposing action carried on by the bacteria of the soil in the presence of the oxygen of the ground air, thereby becoming the food for the plants or grass growing over it. Such systems have worked uninterruptedly for seven years and then when examined the ground was found in no wise different from other garden mould.

The remarks made by the Medical Health Officer of Brantford on the subject of sewage disposal in his annual report well express the present position of this branch of sanitary work.

A class of nuisance which has been referred to in previous reports, and which, in some instances, becomes the occasion of serious effect upon the public health, is that of creeks running through towns, or having house drains and sewers running into them, and in other instances being further obstructed by mill-dams creating ponds, often of considerable extent, must here again be noticed.

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been pumped upon them in a low temperature, the sewage would freeze and would not soak away till all had melted again. A good deal of the time the ditches did not afford sufficient accommodation for the sewage and it was allowed to flow over the open field, but it never reached the large ditch into which the tile drain empties. By the way there was so much rain that the ditch was so filled with water that the tile could not be seen—it was always submerged—and there was no way of determining whether water was escaping from it or not A few times the liquid in the ditches between the beds has frozen so stiff that the attendant could walk upon it; after the liquid under the ice would soak away, the ice would break and fall in. Sorry I cannot give you any further information, but there is none to give. I myself believe the plan will succeed in a cold winter, but this, so far as we are concerned, is only an opinion.

Yours faithfully,

C. N. Bekmer.

As an illustration of this class of nuisance I cannot do better than introduce a brief report regarding the river Speed at Guelph, and the recommendations made regarding it.*

This is in the main a repetition of the nuisance in the river Thames at London, which for several years past has been a *questio vexata* to the courts, and which was reported upon very fully in the report of the Board for 1885. Added to this class are those such as that at Madoc on the Moira, at Chesterville on the Nation, at Caledonia on the Grand, at South River Station on the South River, at Parkhill, etc. Of all classes of nuisance this may be considered as the most difficult to deal with, involving as it does the question of notable losses to those industries dependent upon the water privilege for supplying power to their mills. Some of them are, however, being solved very satisfactorily. The Moira has been led back to its natural channel by the removal of Wallbridge's dam, compensation therefor having been given. The Nation has been lowered by the removal of the dam at Chesterville, the object in this case being the lowering of the river level, thereby lessening the dangers of floods, as well as lowering the ground water in the flat country through which the river passes. The curious fact in this connection is that the villagers protested against the removal of the dam on the ground that the leaving bare of the considerable area of ground forming the pond above the dam would promote the development of malarial exhalations through the decomposition of the large amount of organic matter exposed. Doubtless the evil results would be temporary, since the gradual drying out this area, and the springing up of vegetation would utilize the products of vegetable decay ; but in such cases the stirring of the soil and sowing oats, grass seeds, etc., will rapidly mitigate evils likely to result.

The dangers from sawdust pollutions in streams are yearly growing less in the older sections. The Ottawa is the most infamous in this respect, and to such proportions has the nuisance extended there that the Federal Government has instituted a special investigation into the matter. With the facilities, as at Deseronto, for transforming the sawdust into marketable materials there ought to be no excuse for the perpetuation of the evil. Along

*Report on Nuisance in River Speed, Guelph.

To Thos. Keating, M.D.,
Medical Health Officer, Guelph.

Dear Sir,—In response to the request that I should state my views with regard to the nuisance situated along the River Speed which, in acting on a telegram from your Board, I, as executive officer of this Board, investigated in conjunction with your Board on the 12th of October, 1889, I herewith desire to submit the following report for the consideration of your Board and the city council.

The conditions found were substantially as follows :

1st. A sluggish stream where the river-water is held up by Spence's dam, even when the water is being used, and a stagnant pond extending for half a mile when the water is stored above Goldie's dam.

2nd. When the water has been drawn off, as at the time of my visit, at Spence's dam, or after it has been used as a water-power during the night, there is found existing not only a sluggish or stagnant water but further a large area of organic deposit on the exposed banks, extending for say twenty-five feet on both sides of the river for a distance of about half a mile, or in other words an area of almost four acres. This means that so long as this is the condition of the river, say from May till the frost sets in in November, a mass of organic matter of this area undergoes in varying degree, according to temperature, putrefactive decay.

3rd. Not only has this organic matter the qualities common to vegetable deposits which take place on the bottom and on the banks of all ponds, as also in the shallow water along the shores of rapid streams, and which, when exposed to the summer sun, have never failed to be productive of malaria ; but it further possesses those more malign elements tending to produce such maladies as typhoid, remittent fever and diphtheria, due to the presence in it of the sewage from a very considerable number of private and public dwellings and soakage from manure heaps and privy pits, as well as the bodies of dead animals and offal, which from time to time are deposited in it.

4th. To be more explicit with regard to the essential nature of the nuisance, it is sufficient to say that it is a biological law now generally admitted by scientists that given organic matter with moisture in the presence of a temperature of say 50° to 60° F. and upwards, and exposed to contamination by bacteria, always present in ordinary air, putrefactive decomposition of the organic matter will go on, bacteria will multiply in infinite numbers, producing at the same time nauseating and unwholesome exhalations. These emanations, as gases, pass into the air whenever these surfaces are exposed, as also in less degree from the surface of the water ; while the bacteria are borne along by the winds wherever these moist surfaces have become for even a few hours dried out.

5th. Emanations from nuisances of any sort are borne into the upper air, during the day ascensiona currents due to the heated soil warming the air next to it ; but towards and after sunset the cooling ground

the lakes and rivers of the Parry Sound, and other northern districts, the decay of large accumulations of sawdust, which pollute the water supply and contaminate the air of cellars and the spaces under houses has, for several years past, become a serious evil. The control of these settlements by the large lumber companies makes municipal action directed towards remedying them a tedious and most unsatisfactory process. The Board may very properly extend investigation in this direction. A marked illustration of the dangers from this class of nuisances was incidental to the floods which in June last prevailed at the time when the Johnstown calamity occurred. The Sydenham, which is dammed at Wallaceburg, became completely jammed to a depth of fifteen feet with the logs from broken booms up stream. The presence of carcases of animals and other refuse demanded, in view of the approaching dry and hot season, active measures for the removal of the debris. The absence of a current in the river made this process tedious and somewhat expensive, but the Local Board and council of the town proved equal to the emergency, and danger therefrom was averted.

2. Ground Waters.—The extent to which the physical and material interests of our people depend upon abundant supplies of pure water, supplied in even small villages in a public way for fire purposes, has led me to again direct special attention to a subject which was dealt with somewhat fully in the report for 1887.

The activity which the Local Boards of Health, in many places, are showing in solving this difficulty for the people they represent is another strong reason why they should be supplied with as many facts touching upon this matter as our Board is in a position to supply. I have, therefore, endeavored to again indicate briefly the physical characters of and the phenomena associated with ground waters, and thereafter to discuss some of the biological features and practical points which attach to its use for drinking purposes.

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causes an opposite condition, and these exhalations and bacteria are kept in the chill, moister currents of the atmosphere near the earth and affect often most disastrously persons abroad at night and those living in houses within the influence of these contaminated air currents.

6th. I presume that were it necessary your Board could readily produce abundant evidence that the general laws set forth in the two preceding paragraphs have not failed to develop, especially in the neighborhood of the River Speed, those unsanitary conditions which elsewhere are known to be in greater or less degree always present. The existence of a nuisance being therefore assumed as proved, the possibility of measures being taken either to lessen or to wholly prevent the recurrence must be considered, and in this connection I would say:

7th. That the absence of organic deposits from even stagnant water, or along its shores, were such a thing possible, would mean the absence of a nuisance of this nature; but the absence of organic deposits from running water or from along its shores would still more certainly mean the absence of a nuisance of that nature assumed as existing here. We may further say that even were organic matter to some degree present in the water and not exposed on the shores of a flowing stream, no nuisance of this character would arise in case the water polluted were not used as drinking water.

8th. We may thus prevent the existence of such a nuisance by either of two ways: (*a*) Remove all organic matter from the exposed surfaces now existing, and prevent its deposit there in the future; or (*b*) cause the whole area to be constantly covered with water always flowing, or, since this does not seem possible, confine the volume of water as it at present exists within a channel sufficiently narrow and deep to prevent any exposure of its banks and the maintenance of a constant current of flowing water. With this provision for either removing the existing pollution of the uncovered banks must be had, or the aeration of the soil, as by cultivation, with the growing of some rapidly developing green crop, becomes an essential to the prevention of temporary evil resulting from the further decomposition of this organic matter.

9th. Should the method (*a*) be adopted, it would mean a great expense to either remove or cover over with clean gravel the four acres of organic matter now exposed, while I am not aware of any means which would prevent a recurrence of the pollution by vegetable matter, even though the sewage were completely prevented from flowing into the stream. Similarly, under existing circumstances, it would seem impossible to keep the area as at present existing along the shores from being exposed, unless provision can be made by which Goldie's and Spence's water-power be used at the same time, and that this be throughout the twenty-four hours, the volume of water being thereby at all times much the same. The limited quantity of water, however, makes this out of the question.

10th. There would seem then but one method of dealing with the problem, viz.: to allow no pond above Spence's dam, and to cause the cutting of a narrow, straight channel of sufficient depth to keep the stream flowing from Goldie's dam within its limits, unless during flood time. The water-power might at the same time be continued by carrying the water from Goldie's flume in a pipe to Spence's dam for power purposes if used at the same time.

These methods are those which present themselves to me as being a solution of the difficulty as far as Mr. Spence is concerned. I do not propose to enter into the legal question of jurisdiction; suffice it to say

a. The Sources of Ground Waters.—We are aware that precipitation on land and sea of the moisture of the clouds is the method by which the water, borne into the air by evaporation, is returned to the earth. The yearly amount of rain which falls in Ontario is commonly more than 30 inches; but the amount of this that becomes ground water, that is subsoil or subterranean water, is, owing to its rapid flow from the soil where it falls to the water-courses, and to evaporation, probably not less than half the total amount. That this amount which reaches the creeks and rivers is not wholly lost, but to some degree becomes a source of supply to subterranean waters, we shall, I trust, later on produce facts to show.

To refer to the ground waters of Ontario more particularly, let us recall the geological characters of the strata in which these waters are found. The Laurentian band of gneissoid rock runs in a north-westerly direction, with its western edge in the neighborhood of Kingston, thence running to the south of Muskoka lake, thereafter going to form with the Huronian series, the islands of the Georgian Bay. Overlying this, and varying in extent and thickness, we have limestones, slates and sandstones, and limestones again succeeding each other until the Detroit river is reached. These have a general westerly dip or incline, varied, however, by escarpments, anticlinals and synclinals, probably to a much greater extent than at present we have any idea of. Thus the Guelph limestone is about 900 feet above the sea, the Niagara escarpment reaching in some places nearly 700 feet, while along the Detroit river and Lake Erie the rock level does not exceed, if it reaches, 600 feet, descending again from this at the level of Lake Ontario to but little more than 200 feet above the sea level. Overlying these rock surfaces of varying elevation, we have deposited in widely extended areas along the lower Lake Huron and Detroit river district, the whole of the Lake Erie shore, and a large portion of the Lake Ontario shore far east beyond Toronto, the boulder or Erie blue clay, overlaid in differing degrees of regularity and thickness by Saugeen clays, everywhere interspersed with bands of sands and gravels. On the higher levels, as of the Guelph plateau and the Oak Ridges, we have deposits of varying consistency from the tenacious argillaceous gravels of the central plateau, as at Guelph, to the arenaeous gravels of portions of the Oak Ridges and the stony and sandy soils of the lands dipping towards Georgian Bay.

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that there seems to be no doubt that the owner of Spence's dam, having the water privilege by which the nuisance is caused, becomes under Sec. 60 of the Public Health Act responsible therefor. This being the case, the Local Board, by Secs. 56-60 of the same Act, is called upon in the performance of its functions to order the abatement of the nuisance within a specified time. While not called upon by law to suggest a remedy, the Board may, should it deem it proper, advise:

(*a*) The removal of the dam, leaving the onus of removing the putrescent matter and straightening the bed of the stream on the Local Board or council, the latter to charge the cost (if thought advisable) against all persons known to have been agents of such pollution.

(*b*) The maintenance of the water power by conducting the water to the wheel by a pipe and leaving the whole river bed and dam to be dealt with by the Local Board and council.

(*c*) Other measures might be suggested, such as erecting stone walls for some distance up the stream above the dam along either bank and deepening the bed at this point, at the same time giving it a level bottom, but they would seem to be both expensive and uncertain in the result, as by damming up the water so that it would again overflow the flat only to be uncovered again when the waters have fallen during the running of the mill. The action under existing conditions which will be found necessary, even though the dam be removed, is the prompt prevention by the Board of the pollution of the stream which now goes on from cesspools, stables and privies within the town, the cleansing of the river bed and the straightening of the course, making it narrow and deeper. While this is being done a sewer pipe might be laid in the bed of the river (as part of a well-planned system of separate sewerage, by which the sewage from the houses throughout this drainage district might be conducted to a point below the town to be treated by utilisation on a sewage farm or by precipitation) and so prevent the pollution of the river while giving the town the benefit of sewerage for its most crowded portion.

Should the Local Board, after deciding on the action to be taken, deem an enquiry necessary, it will be proper for it to make application for such under Sec. 64 of the Public Health Act.

Hoping this statement may appear to be a satisfactory explanation of the nature of the difficulties before your Board, and of the steps to be taken for their removal,

I have the honor to be, with regard,
Your obedient servant,

PETER H. BRYCE,
Secretary.

In addition, however, to these broad divergencies in the post-glacial deposits overlying the rock strata, we have the innumerable local differences, nowhere better marked than about Toronto, depending upon the denuding agencies which have hollowed out the whole Lake Ontario basin and produced the valleys of denudation such as the Humber and Don valleys, and the many smaller ravines distinctive of the sharp-cut outlines which deep erosion of these blue clays everywhere presents.

From this *resumé* it will at once appear to all that an endless variation in the conditions regulating the direction, depth and amount of the flow of ground waters must exist, and we have two problems everywhere presenting themselves for investigation, the geological and the topographical. Let me give one or two illustrations.

The little river Avon, beginning on the high ground eastward from Stratford at a probable height of 900 feet or more, takes a general south-westerly course, flowing into the east branch of the Thames, which receives a similar stream at London, and passing westward through Chatham empties into Lake St. Clair some 600 feet above the sea. There are abundant outcrops of rock along the Thames at St. Marys and elsewhere in the vicinity, while at Chatham it is reached by borings at from 40 to 80 feet below the surface alluvium. Apart from the synclinal or depressed area which practically forms the oil-bearing region of Ontario, there is the general incline of strata from the central plateau south-westerly. At Woodstock, at St. Mary's, at London, at Thamesville, at Chatham, and indeed all along the westerly part of this region, there is evidence of the enormous body of water flowing from the higher ground to the east and north in the presence of artesian or flowing wells in greater or less degree, according to the accidental height of the soil as compared with the general level of the locality.

On the other hand, as an evidence of topographical influences, we have the fact that along the ridge of gravel which runs for many miles east and west along Lake Erie, at times touching the lake, at others being several miles away and broad enough to have located upon it such towns as Ridgetown, Blenheim, etc., numerous springs may be seen issuing from either slope, in places only a hundred or so yards apart, those to the south flowing into the lake, the others trending towards the valley of the Thames ten miles away. To give but one other illustration, a gentleman who resided at Norway (near Toronto) for some years, informed me that an old well had been sunk in the sandy soil on his grounds, some fifteen feet, and gave a fair supply of water. Its location being inconvenient to the house he had another well sunk nearer, and within one hundred yards of the other well, and he had to go down some sixty feet in blue clay before what was probably the same bed of sand was reached, it yielding abundant water.

We have already referred to the source of subterranean waters as being due to the rain falling upon the soil, and to the fact that a large portion of the rainfall finds its way to the water-courses without being absorbed by the soil. The balance, however, probably amounting to about 50 per cent. of the total rain-fall, is absorbed, but in very unequal amounts. The amount of absorption, as will be readily be understood, will depend upon, first, the inclination of the surface soil, and second, on its pervious or absorbent character. Setting the first aside as unavoidable, we have to realise that the surface soil of Ontario, with deforesting and cultivation, has lost in large measure the virgin mould made up of decaying vegetable matter which, loose in its character, absorbs in large degree all the rain which falls upon it. This not only gives the underlying soil every opportunity of absorbing all the moisture it can hold, but it also maintains it in a friable condition very different from the hard-baked surface which anyone may notice even in sandy soils which are exposed to the heat of the sun. Accepting, however, existing conditions, it will be seen that notable differences exist between the absorptive powers of argillaceous and arenaceous soils and the various gradations between them. We must here note a difference of much importance in its bearing on this matter, viz., that between the capacity of a soil to hold water or its absorptive power, and its perviousness.

For instance, Prof. Schubler, of Tubingen, states as the result of experiment that

Sand holds by attraction per 100 parts,		25	parts by weight of water.
Loamy soil,	"	40	"
Clay loam,	"	30	"
Pure clay,	"	75	"

Thus we see that perviousness is the opposite of capacity to hold moisture or retentiveness, as the most impervious soils have the greatest power to hold moisture within their interstices. The fact in drainage is a familiar one that where a clay has been puddled—for instance, where the heavily loaded waggon passes over a road—the clay particles become so closely pressed together that it becomes impervious until moisture and the frost have disintegrated it again. Deep clay soils may similarly become through pressure in a large degree impervious.

Now, we have already seen how, in different portions of the Province the superficial drift deposits lying upon the rock vary notably in character, and how the layers which succeed each other may alter in some instances within a few feet. These variations have depended, of course, upon the conditions which existed at the time of their deposition. Remembering that from the melting glaciers and icebergs of the post-glacial eras the detritus would follow the order which we can observe after a storm in any stream, we would expect to find what we do find; that the heavier boulders, gravels and sands would settle first along shores and in the shallow waters, and that the argillaceous materials remaining longer in suspension would last be deposited in the outer and deeper waters. Currents, variations in the outlines of the shore, and all the other phenomena seen daily in lake or stream, must be looked to for the explanation of the local variations; to which we must add the denudations and innumerable rearrangements due to the floods of primeval mighty rivers, and the varying levels which have given us our system of lakes of varying heights.

The arrangement and order of the post-glacial materials has an interesting and very practical bearing upon the volume and direction of ground waters in this Province. To refer once more to the illustration given, we find the general character of the soils over Waterloo and Perth to be calcareous sands and gravels. Where these lie upon the rock we can see that there will be water-bearing strata of pervious layers, which may be continuous for many miles and thus supply a *vis a tergo* pressure of enormous power. This will, however, depend upon the character of the superjacent layers. If pervious, the water will on account of this pressure tend to rise to the surface. If, on the other hand, tenacious clays overlie these pervious layers, as is the case over a large portion of the Province, then these waters will rise to the surface wherever denudation and erosions, as in the case of river valleys, are present, or where borings or dug-wells passing down through impervious beds make a channel by which the tendency of the water to rise to the level of the head which it has can come into play. That this rise of waters in driven wells will take place, depends, however, upon whether there is any hindrance to such underground streams following further in such pervious strata along the incline or dip which we have already supposed to exist in the underlying rock strata.

In other words, the occurrence of an artesian well depends upon the following conditions, as well expressed by Prof. Laveratt, who has examined largely into the question of public water supplies in the western prairie states; (1) A pervious water-bearing stratum; (2) An impervious stratum below; (3) A second impervious stratum above the water-bearing stratum; (4) These strata must be inclined or have a dip; (5) There must be no adequate outlet for the water at a lower level than where the boring is made; (6) A sufficient collecting area or reservoir with superficial porous strata; (7) The collecting area must have sufficient elevation to act as a fountain-head; (8) There must be a continuity of the permeable bed; (9) There must be no flaw or break in either of the confining beds. Chamberlain has given the dip necessary as being at least one foot per mile. From these several conditions it becomes apparent that though one or several of them may be present, yet the conjunction of all of them is not by any means to be expected in all parts of the

Province, although the numerous borings being made, especially in the western portion of the Province, for water, salt, oil or gas give evidence that such supplies of water are much more numerous than we at first might expect.

The details which we have just given are applicable in explaining the source, extent and progression of ground waters on the broad scale. The most cursory examination, however, of the upper soils of many districts in the Province shows that the great proportion of ordinary well water is as yet got from comparatively shallow wells, there being present in most districts alternating local pervious and impervious strata, making wells yielding water possible within fifteen to fifty feet of the surface. In other parts, as in many portions of the western peninsula, shallow excavations through alluvium down to impervious clays becoming reservoirs for surface waters, have till very recently supplied the great bulk of drinking water both in towns and country districts. Now in every instance the same laws are in force, and we have seen that they involve: (1) A downward force of gravity; (2) A hindrance such as an impervious stratum; (3) A lateral movement of ground-water towards the lowest attainable point, whether this result in great subterranean water-beds on the rock strata, supplying conditions for artesian wells; whether in the appearance on the hill sides of gurgling springs and a saturated surface soil in the vicinity, or whether in the soakage into the nearest depression, as wells, cellars or other shallow excavations of waters,—all following the general law of downward and lateral movement where obstructions do not prevent.

In view of the great extent to which the search for and successful utilization of underground waters for public water supplies has gone on, it will be of interest to refer to some of the facts relating to the physical phenomena belonging to them.

As regards the flow of these underground streams, it may be said that their passage through the minute interstices of a permeable soil is similar to that through an infinite series of small tubes or irregular channels. Experiments carried out by Darcy of Dijon, and established by Dupont, have caused laws to be enunciated governing this flow. Thus speaking of these interstices of the soil as of a tube, it may be stated that *the flow will increase with the effective charge* (i. e. volume) *and diminish with the thickness of the layers traversed, which lengthens out the conduit and augments the friction against the walls, and having, as a result, a loss of flow.*

The rapidity of flow as well as quantity will, as already mentioned, be variable, according to the character of the soil.

Thus the interspaces in different materials as given by Durand Claye cause a loss of flow as follows:

Through	Broken stone	45% to 50% of the volume.
"	Chalk	32% to 42% "
"	Gravels of the Seine	43% "
"	Various gravels	36% to 40% "
"	Recent alluvium of Seine	30% "
"	Ancient alluvium of Seine	16% "
"	Fine siliceous sand from pulverized gneiss	17% "

The slight dip of strata becomes, as already mentioned, another most important factor regulating the rapidity of flow.

Properly speaking impermeable beds have no true water-zone: superficial springs may be formed and superficial infiltrations may take place in soil with a covering of vegetation or if well cultivated, and these filtrations produce springs or rather oozings, collecting into a reservoir, in places a little more permeable, of the first minute and discontinuous streams. Thus pits or wells dug result in obtaining only weepings or feeble streams, these wells being popularly called *weepers.*

To illustrate these facts the following instance may be given: A property north of Toronto, and contiguous to the city, had for many years the reputation of having a poor supply of water and some five wells had been sunk within an area of two acres in search of

water. In an old stone well some 35 feet deep there appeared to be, after the fall rains had set in, an abundance of water, it making some 15 feet of depth. Doubtful of the statements, I had the well pumped out, and to my surprise, during a period of temporary cessation from rains, the well remained practically empty.

After subsequent rains, and at the opening of spring, the well has remained full almost to the top. In order to solve the problem of a water supply a boring was made in the stoned well, and fifteen more feet proved to be of a most tenacious clay. The explanation of these phenomena was thus obtained. Determined to obtain water a new adit was made. The pit was pushed down foot after foot into blue clay of the densest hardpan. At 59 feet a change occurred, a dry layer of hard sand was struck and at two more feet the water-zone of quicksand was reached. Excavation became difficult, owing to the rapidity with which the water flowed in until its own level was reached. By careful and tedious work a permanent depth of five feet of water was obtained above a lower impervious layer.

The piercing of the clay solved the problem. This pit has not filled up in the same way as the other wells, an outlet existing for the water at the bottom; while the pits in the clay aptly illustrate the statements made by M. Durand Claye that the simple infiltration into these largely impermeable beds gives rise to (*des suintements*) oozings or slow soakages rather than to springs.

In another well sunk in the clay beds north of the city, in a district with a reputation of having similarly a poor water supply, a well five feet in diameter sunk some sixty feet supplies daily some two thousand gallons, and after steady pumping of this amount by wind-mill has filled the water tanks, a few hours finds the water at its own level in the well.

In both instances the general direction of the dip of the strata is from the Oak Ridges in the north toward the south, while the erosion of these strata, as seen at the Davenport ridge, readily supplies an explanation of how when water is reached beneath these superficial clay beds, no notable artesian tendency is seen at this point; but at a point just north of High Park nearer the lake where the Davenport erosion to the north is much less marked, and on the property of Mayor St. Leger, of West Toronto Junction, in a boring of six inches diameter with a depth of 189 feet, the water has risen to within 40 feet of the surface. The boring was through a bed of sand and some gravel. The water is not as yet of good quality.

The explanation of this phenomenon is probably due to there being an insufficient outlet toward the south, there having been an old valley of denudation in the blue clay, which has subsequently been filled up by the water bearing sand and gravel stratum.

On a larger scale and with the view of determining a problem, of vast importance and value to the Province, the water works company of Chatham have made a series of borings there and have illustrated some important facts.

The following is the character of the strata passed through, which may be taken as a type of the rest:

Dark loam	1½ feet.
Yellow loam	3½ "
Red clay	4 "
Blue clay	17 "
Hardpan	26 "
Soap stone	9 "
Sand	2¾ "
Gravel	¼ "
Total thickness	64 "

The various borings have developed the fact which might have fairly been inferred that the Hamilton shales (so called) which underlie the district have but a slight incline or dip at this point. Assuming the continuity of these strata eastward and north-easterly,

rising somewhat with progress upward under the Thames valley; noting the further fact that under Thamesville water is met with at a moderate depth, and that there is a gradual rise of the underlying rock strata which appear at the surface along the river bank at St. Mary's, in Hibbert Township, etc., we have every ground for assuming that in this distance from the water-shed to Chatham, a distance of 150 miles, with a total dip of 400 feet, or nearly three feet to every mile, there is a water pressure sufficient to give a rise of some 40 feet, the law governing flow as given in the preceding section having been followed. The further fact has been made apparent that in those localities where the water zone or water-bearing stratum, as in the case given, is say 3 feet in thickness, the amount of water rising in a 10 inch boring is sufficient to yield without any exhaustion over 10,000 gallons in 24 hours. Under such conditions there will be but little difficulty in establishing by an application of the laws of Dupont and Durand Claye an approximate estimate of the area which may be looked upon as necessary for supplying sufficient water from a given number of wells, and the distance at which they may approximate without seriously affecting the flow of one another. The same law governs here as elsewhere. "The flow is proportionate to the body of water, the thickness of the filtering layer (water zone) and to its coefficient of permeability."—Claye. Friction in a single tube as in a bored well, has but a slight relative influence. To illustrate, Durand Claye, states that in the Grenelle artesian well with a diameter of 0m.75 (over ¾ of a yard) the loss of the charge by friction in the ascensional tube is one metre, 39 inches (in 510 metres) of height, while the loss due to filtration (that is the passage through the permeable layer below) is 56 metres.

It is for a moment difficult to conceive how a few borings into a water-zone can supply sufficient water for even a small town; but where under the operation of the foregoing laws, it is remembered that a water-zone similar in thickness to the one in the boring at Chatham, *i.e.*, three feet and of a mile square of area, contains 585,446,400 gallons, we may gain some adequate idea of what exhaustless stores of water exist lying buried beneath us. When it is further recollected that on an average 50 per cent. of the annual rainfall (*i.e.* 15 inches) is absorbed by the soil, we see how for broad areas the supply is inexhaustible. To give a practical illustration it may be pointed out that I witnessed at the water station of Brooklyn, N. Y., some 125 two-inch pipes placed around the outer border of an excavation about one-eighth of an acre in extent, intended as the basement for a new building for the water station, yielding a flow of water drawn from this area amounting to between five and six million gallons daily. That similarly ample supplies can be got from a limited area is illustrated by the fact that the Town of Goderich obtains from six artesian wells, within an area of a quarter of an acre, enough to supply the daily needs of the population; and Kincardine is now pushing to completion a system of works whereby the town may if it choose be similarly supplied by water from an artesian source.

In view of the drying up of the small streams which as natural channels are commonly in the neighborhood of most of our inland towns and villages, but which with the cutting of the forest have grown less and less year by year and proportionately more polluted, the facts which have been just set forth cannot but fail to appeal to Local Boards of health in all parts of the country, as in their annual reports, found in the Appendix, there is an almost universal testimony as to the dangers, illustrated by cases of typhoid and diphtheria which have actually occurred, of the pollution of pit-wells and an almost equally unanimous demand in progressive towns and villages for a supply of public water of assured quality.

We have now reached the second and more important part of our subject, and the work to which I have more especially devoted my studies, viz.: the constitution of ground-waters.

b. Constitution of Ground Waters. In addition to the chemical combination of hydrogen and oxygen making pure water, we are aware that a large number of other chemical compounds are held in solution by it, and that in its passage through the soil it dissolves out such soluble matters as it comes in contact with. We may hence speak of the chemical constituents of ground waters as impurities, although, as we know, they owe to the mineral salts in solution their agreeable and wholesome qualities. These impuri-

ties, with minute amounts of organic matter, which from their occurrence independently of all adventitious influences may be called obligatory in contra-distinction to the facultative or inconstant impurities which depend upon influences which may be removed, I do not propose to refer to further here, but shall limit our study to the facultative impurities of an organic character.

Every one is aware that water will carry in suspension, as in rivers, ponds, etc., very large amounts of organic materials, and that from these, whether animal or vegetable, it abstracts soluble matters, remaining present until decomposed into simpler constituents. To give but one illustration, the city of St. Louis, Mo., has four settling basins, holding 18,000,000 gallons of water. Their floors are paved with brick, and upon these are deposited by sedimentation the suspended, and to some extent the dissolved materials of the river water. Once in five months the sediment is flooded out of the reservoirs, and the quantity thus removed is nearly 200,000 cubic yards, of course largely inorganic matters. This is when the needs of the city only allow sedimentation to go from eight to eighteen hours, while clayey matters in suspension often take a week to subside. The sources of these impurities are those common to all river waters, being the vegetable matters borne in from streams and rivulets rising on the upper gathering grounds of the river, bearing with them the soluble matters from the bogs and virgin soils whence these springs rise, as well as the sewage deposits which may be poured in from towns along the river banks. From such causes are due the fact that river waters are considered commonly unsafe sources for public water supplies. They are not only readily contaminated, often to an extraordinary extent, but the swiftness of their waters bears these impurities onward before the purifying influences in the waters have time to perform their work, and hence sedimentation reservoirs and filtration beds have been brought into requisition in the endeavor to bring the water into a potable condition. We see in these operations going on before our eyes with river waters, an illustration of what takes place with ground waters, only that the stages of the different operations are in the latter more slowly and much more perfectly performed. The rains which fall on the surface and are absorbed by the ground bear to it minute amounts of carbonic acid and ammonia, which have, as gases, been borne into the air, due to organic combustion and decomposition. These gaseous impurities of the air, which had their origin in the earth, become of much value in aiding in the chemical disintegration of the soil, and thus help the percolation of water through its layers. The rains, however, receive from the upper layers of soil, which always contain organic matter either of vegetable or animal origin, soluble materials such as the above, soluble albumen, and other products of humus, etc., and moreover, in addition to what may have been borne to earth with the rain, living organisms of various species, notably that of the bacteria, as is now well determined, are the agents of decomposition of organic compounds of every sort, and are present in infinite numbers in surface soils.

It has been already said that carbonic acid and ammonia are the two principal soluble compounds resulting from decomposition of the organic matters of soils. Now, we find, especially wherever albuminoid materials are present, the multiplication therein of bacteria, whether in the soil or in the substance of an artificial culture, that these two gases are amongst the principal products. Subsequent chemical action, as by oxygen, forms carbonates, whilst nitrates develop out of the ammonia present. Manifestly, however, the effect of the oxidising processes will depend upon the depth of the organic materials and the porosity of the soil as regards the movement of gases in the soil and the depth to which the bacteria of the soil are found to extend. Now, while the two first conditions are interdependent and conditional in some measure upon the depth at which bacteria will be found, yet, as will be seen, there are several other factors in the problem which must be considered.

Duclaux has stated that of the agencies which render water sterile in its passage through the soil, "the first, the oldest known, and without doubt the most potent is the capillary action of the soil. Filtration practically retains in the capillary pores the materials in suspension in the water, and with them the germs of microbes. It is a fact clearly demonstrated, on which I shall only insist in order to attempt to indicate slightly what one calls capillary filtration." . . "It is proper to mention at the outset that the

capillary character of the channels in which circulates the water of rain has only the effect of augmenting the action of the surfaces on the volume of water which leaves them, that is to say, of multiplying the chances which a solid particle in suspension in water can have of encountering a portion of wall on which it fixes itself, drawn by a force analagous to that which fixes coloring matter in a tissue placed in a coloring bath. The effect would be the same if the chances of contact were found increased by any other cause. . . It could happen, and sometimes does happen, moreover, that a long repose causes to adhere to the walls of a vase the particles held in suspension in the liquid which it contains. It can happen, and without doubt does happen, that a slow filtration through a great length of spaces non-capillary and even somewhat large, produces the same result as through capillary spaces shorter and narrower.

We thus see that at the rate at which water passes downward through the soil, which as Hoffman found at Leipsic in some virgin soil was at the rate of 6·2 millemetres daily, or two metres annually, and which, as Duclaux remarks of ground waters, may remain six months or more as subterranean water before appearing at the surface in springs, ample opportunity for sterilisation by filtration is given. An exception to this sterilisation of deep waters may be seen in calcareous soils, in which the action of carbonic acid on the chalk has by solution caused fissures, often to great depths. They may bear contaminated waters very long distances. The conditions which regulate filtration in soils are, as Pettenkoffer says, so sufficiently constant that general laws may be made regarding them. He remarks that the volume of the pores does not vary much in various soils, and may be considered to occupy the third of the whole. The dimensions of each pore vary considerably in different soils. In soils which contain large pores the water penetrates rapidly; a compact soil, in which the pores are very fine is essentially hygrometric.

Subterranean waters may hence be uninfluenced by the heaviest rainfalls, if the water stratum be deep and separated from the surface by layers which may retain the heaviest rainfalls without allowing a drop to pass through. It is apparent, therefore, that with allowances for different kinds of soils we have roughly different areas, or, as Hoffman calls them, different zones, viz., the upper or evaporating zone, which may even hold the rain-fall of a whole year, and becomes the receptacle of all kinds of organic impurities, the culture medium for germs of every sort. Hygienically, this is of all the most interesting and important. The second, or intermediary zone, always humid, reached at varying depth, may give passage to waters very slowly, and only gives passage to the surplus over saturation derived from the upper layers. While generally speaking this area is beyond the influence of surface operations, yet it will readily be seen that in the degree that the superficial layer becomes, by the leaf mould of forests, drainage and cultivation, more pervious, the greater the amount of water that is absorbed, and the more readily will the underlying zones be influenced from it. Drainage and the cultivation of grasses, now that the forest areas have disappeared, are essential to the conservation of the level of ground-waters, since through their agency perviousness of soil is maintained, and the retention of pluvial waters where they fall is made possible.

The third zone in compact soils is only a few inches thick, increasing in depth where upper soils are more pervious. This is the supersaturated layer, along and through which flows the underground stream. The depth of this stream or the thickness of this zone is slowly or rapidly influenced according to the compact or porous character of the upper soils, the extent of the watershed above any given point, and the inclination or dip of the more or less impervious stratum or hard-pan along which this underground stream flows as also its depth beneath the surface. The illustration already given in the instance of the London West flood demonstrates this, while on the other hand the greater hygroscopy and retentiveness of clays with their closer texture, as already shown, will prevent surface influences readily showing themselves.

The remaining cause influencing these subterranean streams is that already referred to as existing here and there in those instances where the surface stream, as some river or lake, has water in the same level as the subterranean waters. The rise and fall of these surface waters caused by heavy downfalls of rain, and by winds raising or lowering the level at different parts along a lake, *e.g.*, Owen Sound, Goderich, Lake St. Clair,

Moulton township, etc., shows how the ordinary conditions governing these underground streams may have local extraordinary influences contravening the general law.

Returning to the consideration of the conditions which govern the existence and multiplication of microbes in the soil, we have to recollect the inconceivable richness of the superficial layers of organic matter in microbes. Two millions to a centigramme of soil as Duclaux gives it, but imperfectly conveys any idea of their number. Take the instance where in heavy clay soil the autumn and spring rains have saturated it almost to the surface. Here the small amount of air in the upper soil prevents oxidation in large measure of the organic matters. This lack of oxygen impeding the multiplication of bacteria is notably aided by the low temperature of this soil induced by evaporation. Parkes indeed found a difference of 12° Fahr. in the temperature of the upper layers of two contiguous pieces of bog land, one of which was drained while the other was not. Now, when the ground-water falls, the air follows, and with moisture and warmth nitrification goes on. But this favorable condition may be temporary. The heat of summer rapidly bakes such surfaces, air does not penetrate to the deeper layers, and moisture being deficient the multiplication of bacteria is again limited. Clearly, however, the recession of ground-waters from the surface with increasing temperature, as after the spring rains, means an increase in depth of the area to which nitrification extends—in other words the depth at which bacterial infection of the soil is present. In fairly pervious soils the roots of species of the clover and pea family have been found ten feet below the surface, while the roots of trees following the area of perviousness and nitrification, run laterally, spreading out to tile drains, and to a depth of twenty feet or more. As Duclaux remarks, the extension of germs downward in the soil ought theoretically to take place by a gradual extension, by increase from point to point by gradual growth, invading the deeper layers, and carrying life into regions which we know remain sterile. He then asks, why this sterility? Fraenkel has pointed out that the temperature at two or three metres below the surface is an absolute obstacle to the multiplication of the bacilli of typhoid and cholera, yet inasmuch as microbes may through cultivation acquire an ability to grow at lower temperatures than those normal for them, Duclaux affirms that the low temperature is not sufficient to explain the phenomenon. Further the absence of nourishment cannot be mooted as a sufficient explanation, since microbes can live and even multiply in distilled water, living, as Pasteur says, on their own tissues A most powerful cause here exists in the absence of oxygen, which is more rare the deeper we go into the soil. Instead of oxygen, we find in such layers carbonic acid relatively in excess, and Léone of Munich, of Pettenkofer's laboratory, has by experiment found that Munich water, which at the place of origin contained 115 microbes per centimetre contained 10,500 in 48 hours and 500,000 after five days. At the end, however, of another five days, he found that in this water, in which the carbonic acid due to decomposition had so greatly increased, the number of microbes had fallen to 87 per centimetre. That this gas has a specific influence in preventing the increase of microbes was proven from the fact that if replaced by a current of hydrogen there occurred a rapid increase in the number of microbes.

As to whether or not, however, anærobies or microbes which multiply in the absence of oxygen, can multiply in these deeper layers, experiment is as yet lacking on the subject. Certain it is that these waters flowing in the tertiary zone or stratum of supersaturation with a slow and uniform movement depending upon their depth, the weight of water and dip of the underlying impervious bed, end by arriving at the surface as springs, or in wells (either dug or driven) in a sterile condition. Arrived here, the water comes in contact with air, sometimes with light, also with infected soils as of the mould of the surface or the organic matter which finds its way into wells, and the conditions of sterility having disappeared, it becomes again inoculated with microbes.

As may be readily understood, the further from such underground conditions a water proceeds the greater are the possibilities of its inoculation and of the variety as well as the number of the microbes in it. As natural waters in different regions vary in temperature and in the amounts and character of the organic and mineral constituents in them

it is only natural that different species of these microscopic plants should be characteristic of different waters. Winogradsky has studied the species in sulphur waters, while Fazio and others have found species peculiar to the waters of Naples, Castellomare, etc.

How extended are these differences of species, and what the peculiar influences favourable to each are, has not yet been investigated. Indeed, it may be said that this study of species is little more than begun. When classification has become possible the still more difficult matter of deciding which are pathogenic and which are innocuous will remain.

With a view to determining under what circumstances these sterile underground waters can be obtained for drinking purposes, work has recently been carried on by Carl Fraenkel, of Berlin, and some interesting results have been published. I shall take the liberty of introducing here a condensed abstract of his experiments, as they are found to be wholly in accord with the views which reasoning based upon the known facts would lead us theoretically to believe.

Fraenkel's investigations were undertaken to determine if it were at all possible to remove with complete success infective material which had once got into a well.

He notes the two forms of wells, so-called kettle wells (kessel brunnen) from which the water is obtained by bucket or pump, and the driven wells (robren brunnen.) These two forms are exposed to different methods of infection.

The kettle well is exposed first to infection from above: secondly, they never possess walls of such a character as to exclude infection from the surrounding soil. Experienced well diggers assure us that no kettle well, even those with the best cement or asphalt walls can be depended upon to remain absolutely tight. They constantly act in relation to the surrounding soil as powerful drains which receive not only the ground water, but also the suface water. They are protected of course to a certain extent from surface infection by the filtrating power of the soil. Superficial layers, however, are much more loosened up (artificially and naturally) than lower layers, consequently the power of filtration is not so great.

Tube or artesian wells are not exposed to such danger of infection from the upper opening as kettle wells. From the side, from the nature of their construction they are completely free from dangers of infection.

Both wells may be infected if such infection exists, from the ground water.

Fraenkel reviews the subject of the germ contents of ground water, considers the results as unsatisfactory, and consequently in this paper takes up the question anew.

The bored wells which were used for the experiments, were two in number, situated in the court of the Berlin Hygienic Institute, in a part of the city which had been inhabited for a number of years and within a few hundred metres of the Spree. Both had been placed in position about two years and a half previously, and had been little used. At the time of investigation the wells had not been touched for several months; the ground water stood at 4·48m., average day temperature 12° C. (52° F).

Water first removed contained in 1 cubic centimetre 10,800 germs. The large number is explained by the stagnant condition of the water.

	AMOUNT PUMPED.	NUMBER OF MICROBES.
April 10th, 1888	Litre 2	7,200 per ccm.
	" 50	560 "
	" 100	154 "
	" 200	120 "
	" 500	54 "

Next day, April 11th, 1888 :—

Litre 1	7,000 per ccm
" 50	140 "
" 100	160 "
" 200	84 "
" 500	42 "

April 12th, third day, practically the same results; even when double the amount of water was taken out, the results were about the same.

April 13th :	Litre	1	Plate fluidified.
	"	50	130
	"	100	150
	"	200	42
	"	500	20
	"	1000	18

It was apparent from the sudden fall from litre 1 to litre 50 in the number of germs, that the number in first litre is due to development in well itself; this is shown by tables in which every litre up to the first ten was examined.

April 16th, 1888:	Litre	1	6,400	microbes.
	"	2	5,000	"
	"	3	4,200	"
	"	4	1,400	"
	"	5	800	"
	"	6	800	"
	"	7	450	"
	"	8	380	"
	"	9	360	"
	"	10	320	"
	"	500	360	"

The same day six hours later the well was again examined and gave :—

Litre	1	6,800	microbes.
"	5	3,800	"
"	10	620	"
"	100	80	"

It is evident that an extremely energetic washing is necessary to remove the masses of bacteria in a purely mechanical way (amount of water actually in pump was calculated at 5 litres, depth of well 8 metres.)

The continued appearance of bacteria after the removal of so much water may be explained by the continual entrance of fresh germs in the incoming ground water at the bottom of the well. But it may also be due to the formation of a zoogloea membrane by the bacteria which stick to side of tubes and small portions of which being given off to water which passes through would give rise to the constant appearance of germs. Then in order to determine the character of ground water it became necessary to thoroughly disinfect tube.

On April 27th, the water showed the following :—

Litre	1	11,200	microbes.
"	100	110	"
"	500	22	"

On the 28th the pump was taken out and placed for two hours in a two per cent watery carbolic acid solution; the tube itself was thoroughly washed by means of the long-handled brush, and finally 12 litres of a 5 per cent. solution of Laplace's mixture of raw carbolic acid and sulphuric acid (equal parts of each) was poured into the tube. It quickly sank into the well until finally the water stood at its original height.

Next day the well was pumped out and water examined. After 100 litres no trace of carbolic acid either by odor or by zinc chloride reaction was present; also at 500 litres, gelatine plates from water remained sterile. Well remained sterile for seven days after

disinfection. There was the possibility that carbolic acid still remained in ground water and destroyed organisms there present. Direct experiment showed that sterile water if artificially infected had no injurious effect on organisms ; the sterility of water was due to disappearance of organisms from tube.

After seven days the well was left for one day without pumping. Next day germs had reappeared. Evidently this was due to infection from above, water having been left in undisturbed condition they had had time to develop and form in the zooglœa stage.

Second experiment was disinfection with 40% sulphuric and carbolic acid mixtures. Tube not mechanically cleaned ; results same, remained germ free for six days. Then a gradual reappearance.

Third experiment, less carbolic acid mixture taken but concentrated (2 litres). Taste of acid noticeable for several days after, but gave no reaction with ferric chloride. Remained sterile four days, but not till the 12th day did germs reappear in 500 litres.

Further experiments undertaken with bored wells gave results completely agreeing with above.

Fraenkel notes here that the sterility of water might be due to the fact that carbolic acid had sterilized a layer of soil at base of tube which for several days filtered away the organisms in ground water, but that finally they penetrated this layer and then appeared in well. To overcome this objection he caused well some days after the complete re-establishment of the germs in it, to be thoroughly cleaned out by scrubbing it for half an hour with a long-handled brush. Then water examined gave the following results :—

Litre	1	innumerable microbes.
"	100	780
"	500	sterile

and the well remained sterile for the four following days.

It was evident that germs originate from sides of tube itself and not from ground water. Mechanical cleaning was sufficient to alone remove them.

He concludes, therefore, that except in certain cases (dependent upon soil) the ground water may be looked upon as germ free. Conditions which might lead to an infection of ground water are soil above the water, layer rather loose in character ; water layer too close to upper surface of ground, occurrence of drains in water layer which were not perfectly tight, or finally, the presence of muddy wells.

Finally he studied effects of the disinfection of bored wells upon spores of bacteria. He could not use anthrax spores from their dangerous nature, but used almost equally resistent hay bacillus spores and spores of blue milk bacillus, as well as the micrococcus prodigiosus.

Results were all favorable, sterilization being easy. He tried the disinfectant characters of lime but found there was not sufficient amount of water in bored wells to dissolve it, and that there was danger of spoiling well by formation of a sort of mortar which could not be easily removed.

He next started a series of experiments on two kettle wells, also situated in the court of the Hygienic Institute, and each containg about 1.3 cubic metres of water.

Kettle Well 1. May 10th water showed as follows :—

Litre	1	320	microbes.
"	100	130	"
"	500	70	"

May 11th. Two litres containing sulphuric and carbolic acid were poured into the pump and left till following day. Then first water showed strong carbolic reaction, and it could be noticed in water for about a week, gradually becoming less intense.

May 12th, water apparently sterile.

May 13th, litre 500—17 colonies.

May 14th, all three contained colonies, (1,100,500), and an increase in number was noticed from that time in spite of the still considerable amount of carbolic acid in water.

May 19th, 10 litres—carbolic mixture poured in, pump tube brushed out and the water in well thoroughly mixed up. Results were even more unsatisfactory.

May 20th, germs in water in spite of intense odor of carbolic acid, water of a brownish yellow color, and ferric chloride test gave a very marked reaction.

May 21st, germs had increased to an extraordinary number in spite of the presence of considerable carbolic acid. Explains want of success in above experiment as follows :—

In kettle wells, where there is always a considerable amount of water present, a sedimentation takes place of the stagnation contents, and the formation of a thick layer of mud on the bottom. In addition, there is the formation of a much larger amount of the zoogloea layer on the wall than in the bored wells. The very much larger number of bacteria in second experiment than in first is explained by the fact that before the first experiment the well had stood untouched for a long time ; consequently the water had, as it were, been exhausted of all its food material by the bacteria which were in it, and they had all been converted into spore form, and had sunk to the bottom, forming a thick layer in mud.

The pumping out of the water had allowed fresh water to stream in, and the stirring in connection with the experiment had disturbed material at the bottom of the well.

The carbolic acid had destroyed the germs in the water itself, but had not reached those in the mud at the bottom of the well.

It also explains first appearance of organisms in the 500 litre sample *i. e.* in lower layers of water.

Another experiment on the same well combined a large amount of sulphuric-carbolic acid mixture (10 litre conc.) with as thorough as possible a disturbance of the mud layer. The result was not much better, the water was sterile for two days, then came the re-appearance of germs with continued presence of carbolic acid.

Next experiment was on kettle well 2, which was not walled over, but simply closed by a stone which could be lifted.

May 16.	Litre	1	6400 microbes.
	"	100	920 "
	"	500	180 "

May 17. Stone cover lifted ; mud at bottom 7.8 cm. thick. By means of a stick with heavy T piece at end, the mud was mixed up with water as thoroughly as possible. Then 10 litres conc. sulphuric-carbolic acid poured in, and the contents of well further stirred up, and the water scraped.

May 18.	Germ free.
May 19.	" "
May 20.	" "
May 21.	Germs appeared first in litre 500.

He concludes that well was not thoroughly sterilized.

A second experiment gave similar results, but a somewhat earlier reappearance of germs, possibly due to sudden rise in temperature.

It is thus evident that sterilization in above manner is not practicable, especially as the long continued presence of the carbolic acid in water prevents its use.

Therefore he endeavored to find the value of lime as a disinfectant for wells, as 1st, Its presence in water does not prevent its use, and 2nd, It has shown itself especially useful in cases where it was a question of the removal of suspended organic matter.

June 9th. Ten kgrms lime was shaken up with four kgrms water, and the whole poured into well (2). Then the well contents were thoroughly mixed mechanically, and finally the water raised to the top of pump in order to disinfect it also.

June 10th. Samples intensely alkaline. Water for the four following days contained a considerable amount of lime in solution.

But three days after disinfection germs appeared in 500 litres, and the moment the free lime disappeared from the water, June 14th, a tremendous increase in germs was noticed.

Results therefore were unsatisfactory.

A second experiment with 25 kgrms lime gave same results.

Experiments similar to those on bored wells with spores of hay bacillus and blue milk bacillus, and culture of micrococcus prodigiosus, showed that 20 kgrms lime was capable of removing them from water.

It is evident from above experiments that a complete disinfection of kettle wells is impossible by means used; but that for the destruction of germs which might possibly get in from above, immediate use of considerable quantity of lime to be recommended.

He concludes that the evidence against the kettle wells is very strong, and agrees with Pflugge (Zeit. für Hygeine Bd. II s. 406) in calling them "hygienic monsters."

He strongly recommends their replacement in all cases by bored wells.

These experiments are to me intensely interesting, published as they were at a time when I had undertaken to determine, with such time and ability as were at my disposal, the bacterial relationships of waters existing under a number of different conditions.

On the 5th of July last the works were opened at the London asylum in connection with the sewage farm intended to dispose of the sewage from that institution. Under the superintendence of the Public Works department, the plans prepared by Col. Waring were completed. The sewage was to be pumped daily to the farm by a Webber centrifugal pump, which finely divided the solids it contained. At the farm the sewage was turned into a number of open ditches eighteen metres deep, by six at top and two and a half at the bottom. Alternating with these were flat beds 12 feet wide, graded to a level surface. Under each alternate bed was a field tile drain four feet deep, increasing to six at the further side of the field where they join a common effluent tile, this leading to an open ditch farther down known as Carling's creek. This flat-bed is composed of a very sandy soil some five acres in extent, and is supplemented by a field of some ten acres, graded for surface irrigation. One-third of the ditches were flooded each day, but the extremely dry weather prevented even a portion of the field from becoming saturated during July and August, and so prevented the attainment of one object of the experiments, viz: the comparison of the biological character of the water running from this effluent tile as compared with the several other waters which were examined. The water samples were taken under the supervision of Dr. N. H. Beemer, of the medical staff of the Asylum, in sterilized and capped tubes sent to him from week to week. The examinations made the succeeding day, while not giving the exact number of the microbes in the water at the time of taking, would yet give the comparative result of the different waters examined. Without giving the exact details regarding the different species, and the results of the different weeks' examination of the few drops of water taken from any sample, this being all that is needed for an examination, I may say that the successive samples of different waters showed a surprising constancy of forms both as regards species and number. For instance:—

1. Tile drain—14 colonies, 10 liquefying, 4 non-liquefying.
2. Effluent from sewage farm, 6 liquefying, 3 non-liq. One week only.
3. East Creek—All portions of culture showing innumerable slowly liquefying colonies, all the same form apparently—probably *m. candidans*.
4. Carling's Creek—All portions of the gelatine show innumerable liquefying points with whitish granular particles in the larger liquefactions.

Nos. 5, 6, 7 were practically sterile, showing as they did only one or two forms which were not moulds—few in number, some seven in all in the whole series of cultures. The notable fact gained was, however, the innumerable bacteria present in the open water of creeks. Samples taken again and again from both Carling's creek and East creek always produced one form in great abundance—probably *m. candidans*—in the latter in greater abundance as the water with the drought became less in quantity and more impure. It was always with much satisfaction that our inoculations of London city water indicated practical sterility—taken as it is from springs appearing at same height above the river bank below the city and gathered in a small collecting gallery. The samples were taken from a city tap. The same sterility was found in the water taken from a faucet in the pump-house at the Asylum, the water coming from a bored well of considerable depth. The water from the tank at the top of the building showed occasionally a

mould or two, as would be expected from a tank in a confined space at top of the house. Not less interesting is the fact that the water arriving at the mouth of the tile yielding subsurface drainage from a field was practically free from bacteria. The effluent water from the tile drain leading from the sewage farm, the one week that a sample could be obtained showed as great freedom from contamination as did the other tile water. Of course, there had been no time for polluting the soil, and this was probably ordinary subsurface water. It showed, however, that the field, some five acres in extent, was capable of absorbing more than 100,000 gallons daily without supersaturation in dry weather. A letter received in March last from Dr. Beemer says so far the farm, during this whole winter, shows no surface collection of a notable character, although the soil everywhere, as we know, has been in a condition of almost complete and constant saturation.

Now, without making any positive statements, I think that as regards this whole matter of natural waters, we may fairly draw the following general conclusions :—

1. That, while the atmosphere as compared with the soil is relatively free from bacterial life, yet rain water bears to the earth from the air and gathers from the roofs, etc., the elements of auto-contamination, and finds in the organic matters gathered from roofs, etc., abundant nutriment for its contained germs.

2. That falling on the surface of the ground waters become contaminated.

3. That of these contaminated waters probably 50 per cent. are not absorbed but follow the surface inequalities into brooks, and thence into the larger streams and great lakes. The brook as it passes through virgin soil collects much albumenoid matter which affords abundant nutriment for microbes, borne into it from every side, and when the stream reaches a part where barnyards and other sources of sewage pollute it, it is likely—nay certainly will—become contaminated with bacteria of a dangerous character.

4. Where gathered into the great lakes deep and hence very cold, with a constant aeration going on and constant exposure to sunlight of their great areas, there occurs a great diminution in the bacteria of the water through a lessening of the organic nutriment for microbes, and hence a great halt in the multiplication, owing further to the low temperature, aeration and exposure to sunlight.

5. Rivers, shallow lakes and bays along great lakes, and these especially during those periods when by evaporation their volume is so greatly diminished, are likely to become very impure, and the causes of their impurities are likely to remain more or less permanent.

6. The fifty per cent. of rain water which is absorbed by the soil a has different history. Loaded with impurities in the upper layers of the soil, it passes slowly by percolation downward and loses gradually through capillary attraction, lessened nutriment, decreased amounts of oxygen and increased amounts of carbonic acid, its previous bacterial pollution, and with few exceptions appears in springs and subterranean streams where tapped, either by tube or the common pit wells, as absolutely sterile or wholly devoid of bacterial life.

7. That in the tube well with careful driving of the iron tube to prevent soakage along its outside, and a brief pumping to carry off the contaminating bacteria which reach the inside through aerial contamination, we can obtain a practically sterile water of the first quality for drinking purposes.

8. Through organic soakage in the upper and most readily accessible direction for the lateral movement of subsoil waters, such waters carry abundant nutriment for bacteria, which are carried in in the same manner also by the filthy washings of the top and from the air which occupies the pit. With little aeration, the absence of sunlight and a temperature in shallow wells affected by external temperatures, conditions most favorable for the development of bacteria exist. Hence these wells under ordinary circumstances, but especially when found in back yards, under kitchens, in barnyards or as shallow dug-outs in the black soils of the west and all newly settled countries are veritable pest-holes, more dangerous to the health than probably all other local sources combined, in those seasons when low temperatures do not prevent bacterial development. They are in reality what Pflugge calls them, " hygienic monsters."

I cannot do better than conclude this subject, which is exhaustless, by quoting words of Duclaux, "One suspects more a water which receives a minimum quantity of excremen-

titious matters than a water which might be charged with germs after the water had run over a desert region. This question of the nature of germs is too important for us to dream of limiting it to the length of this review, already long, in which we have wished to study the question of quantity. But in waiting that one may find the means of indicating in a water the hurtful or pathogenic germs which it contains, and having found in this way a measure of their degree of nocuousness, we confess that the only waters to be recommended are those which contains no germs at all."

2. Outbreaks of Disease.—The year, apart from the extensive outbreak of diphtheria in the northern districts of the Province, which prevailed in the beginning of the year, and was referred to at length in the report for 1888, has been notable as showing an immunity which is certainly unprecedented during the years since the formation of the Provincial Board. A table which appears under the sub-heading of Diphtheria amply illustrates this fact. What proportion of this has been due to the meteorological conditions which have prevailed during the year, it would be difficult to say; but the short-lived existence of the two or three outbreaks of smallpox which have occurred, cannot fail to give prominence to the fact that the organization of Local Boards of Health and the executive powers in matters of epidemic disease which have been laid upon them, as also upon this Board, have played no small part in preventing outbreaks which occur from time to time from assuming those proportions which formerly was no unfrequent occurrence.

a. La Grippe.—Exception to this general immunity needs to be taken in the widespread—we might say universal—existence of La Grippe which, in the last months of the year, made its appearance in rapid succession in the different parts of this Province, and continent, resulting through its depressing and exhausting effects on the nerve centres, in the appearance of sequelæ which unfortunately proved fatal to many adult members of the community.

So much has been said and written on the subject, both in the medical and public press, that it would seem unnecessary to further discuss the subject, since in the matter of causation, it must be classed with those epidemics whose genesis depends some initial unknown cause, but of which the conditions for dissemination can in some degree be tolerably well comprehended.

Such pandemics, we must assume, depend upon those general meteorlogical, local and individual physical conditions which govern the appearance and spread of certain other contagious diseases; and we cannot, while confessing our ignorance as to the exciting cause, the less urge the dominating influence of house atmospheres, under the conditions which prevail in civilized communities, in directly intensifying the virus, both in its rapid multiplication and in the opportunities for infection by personal contact thereby created.

b. Small pox.—As for several years past the appearance of this disease has been but slight while its extinction has been speedy and its extent very limited.

As will appear, however, in the special reports found on a later page, an outbreak which for a fortnight assumed a threatening aspect, occurred at Fingal, in Elgin county in the latter end of February, resulting in some 43 cases and 13 deaths.

The accident of its not being diagnosed as smallpox in the first two cases caused such a number to be exposed to it, as under other circumstances would have been impossible. When the diagnosis of the several fatal cases was correctly made the alarm became widespread, and the aid of this Board was called in.

Visits were made to the infected districts first by our late colleague, Dr. Mackay and later by your Secretary, and certain additional measures in addition to those already taken by the local authorities were made in order to have the disease stamped out almost as promptly as the time taken for existing cases to recover made possible. Not more interesting is the way in which adjoining municipalities took energetic measures to protect themselves against the possible introduction of the disease. Medical Health Officers, if not already appointed, which was, indeed, in a very few instances the case, were at once appointed, vaccination stations fixed by the councils or Local Boards, and public vaccination carried on in a very general. Reference to the disinfecting precautions undertaken in such instances as that by the

Local Board of Aldborough causes us to conclude that, regarding smallpox at least, the Local Boards of Ontario have learnt about all that is to be known on the subject. While the fact of its mode of introduction illustrates how essential vaccination is, yet the number of persons vaccinated subsequently within a fortnight amply shows how ready our people are to believe in and undergo the unpleasant operation of vaccination. The experience with outbreaks in the past in this Province would almost incline us to the opinion that in countries having a comparatively thinly-distributed but intelligent population the annual compulsory vaccinations of European countries, with their dense populations, are largely unnecessary, so rapidly can infected centres be circumvented. But in view of the fact that a very large proportion of our population are more or less perfectly protected at present by vaccination such a conclusion could only fairly be arrived at under conditions which at present do not exist. Suffice it to say that prudence in the matter of prophylaxis makes it most desirable that at an age when a few days' *malaise* causes no loss of working-days, and when disease of a general character is less severe, the provisions requiring all school children to be vaccinated ought to be systematically carried out.

The report of the outbreak in Elgin found in a later part of the report contains the essential points of interest with regard to it :

The second and less serious outbreak of smallpox occurred, as will be gathered from the subjoined report, in an unusual manner, and, owing to the isolated position of Pelee Island, presented, on the one hand, special advantages in the way of isolating the infected area from the general community, and, on the other, special difficulties, owing to the difficulty experienced in obtaining medical assistance and of maintaining close communication with the afflicted settlement. Too much praise cannot be bestowed on the Local Board, who, wholly unused to dealing with outbreaks of disease, took such prompt measures as to secure within a few days the vaccination of every person on the island, and to isolate those attacked, thereby limiting the attack to six persons, all of whom had been exposed before the nature of the disease was really comprehended.

In consequence of the only practitioner on the island being the first patient, the community was placed in the peculiar position of having no other medical man to appoint as medical health officer. In their need the Provincial Board arranged to supply the temporary deficiency, but again the energy of the Local Board made any action required on the part of this Board wholly advisory. That only one death occurred is most commendable to those engaged in stamping out the disease.

The following report of the outbreak will be read with interest :

Toronto, October 29th, 1889.

My Dear Doctor.—Pursuant to instructions received October 16th, I proceeded at once to Pelee Island where it was reported was an outbreak of smallpox.

Before crossing however, from the mainland I called upon Dr. Sutherland, Health Officer of Leamington and Township of Mersea, also upon Dr. King, acting Health Officer of Kingsville and Township of Gosfield South, urging upon them the immediate enforcement of those clauses of the Public Health Act relating to compulsory vaccination—the necessity of which you had previously notified them of by letter. I have now the pleasure of reporting that compulsory vaccination is in force in the before mentioned towns and adjoining townships.

As this is the first occasion upon which Pelee has appeared upon the public health records as the seat of an outbreak of any epidemic or contagious disease, I may be pardoned for briefly referring to a few facts as to position, etc., of the Island. Lying about 16 miles to the South of Essex County, situate near the western end of Lake Erie, close to the international boundary line, it is the most southern point in Canada. In area a little over 10,000 acres, its extreme length, 11 miles ; and greatest breadth, $3\frac{1}{2}$; the population scattered throughout its whole extent, numbers 513. The principal point of communication is Kingsville, which at this season of the year is not regular.

The first case of smallpox appeared upon the west side of the island during the first week of October. (History of case appended "A.") but was not seen by a medical man until October 11th, when Dr. Chamberlain, Leamington, (to whom I am indebted for the history) was called in ; when then seen the eruption extended pretty well over the body surface, being in character vesicular.

The patient, who had been boarding at the hotel from September 24th or 25th, was removed October 9th to the house of Mr. Mickle, 1,000 feet to the north, and it was there he was seen

by Dr. Chamberlain. McKee. school teacher. who had been acting as principal nurse accompanied the patient—the house was occupied by Mr. McKee's wife and girl—and since the nature of the case has been ascertained has been used as special hospital ; it is marked B* in plan.

Although I believe Dr. Chamberlain did not notify the Local Board of Health as to the case being one of smallpox, yet his mentioning the fact to those more immediately in attendance, was the cause of the meeting of that body promptly the next morning, and in the absence of any medical officer to advise, and the passing of orders as per B, from the date of Dr. C's. visit (October 11th) until the 17th, when Dr Duffield. Health Officer of Detroit, Mich., accompanied by Dr. Campeau Health Officer, Kingsville, visited the island, the people were without medical aid or advice. The result of this visit was that Dr. Campeau was appointed Local Health Officer, and strict quarantine was enforced by a sanitary constable.

It was not until Saturday October 19th, I was able to reach the island. the condition of affairs was then as follows : (See plan.)

In the hospital B* one case—Dr Snider attended by McKee. who had nursed the case from beginning. also male nurse appointed by the Board of Health. (had smallpox some years ago)

In quarantine were 22 persons, being all whom the Health Officer could ascertain as having been liable.

A.—Hotel where case was until October 9th.

Robert Little.	Mrs. Little and three children.	Mrs. Nickison.
Miss Keoberly.	T. R. Lidwell.	C. Maitland.
B. Chatfield.	F. Keeley.	R Prescott.
—. Longhurst.		

C.—Hy. Mickle. Mrs. Mickle and girl. A. M. McCormick.
Norman McCormick.

D.—Miss Mary McCormick.

E.—(Over one mile south of dock.)
H. Cornwall. F. Matthews. A. O. McCormick.

The above persons had been vaccinated and the hotel had been partially fumigated—the want of sufficient drugs only preventing its having been fully carried out.

The right course not having been taken to enforce the compulsory clauses of the Health Act, a meeting of the township council was convened on the Monday and action taken—three centres being chosen where the inhabitants could meet the public vaccinator—a large number had, however, been voluntarily vaccinated.

Up to the time of my leaving three (3) new cases had developed amongst the quarantined, they were : T. H. McKee, N. McCormick, A. O. McCormick. The last case assumed the hæmorrhagic form and proved fatal.

As to the carrying of passengers, etc. to the mainland I instructed none to be taken, but those having certificates from the Local Health Officer and notified the Health Officers of Kingsville and Leamington to receive only his certificate as proper guarantee.

All of which is respectively submitted.

I have the honour to be,
Yours truly,

CHAS. S. HODGETT, M.D., L.R.C.P., London.

P. H. Bryce, Esq., M.D.,
Secretary Provincial Board of Health,
Toronto.

History of Case.

Dr. Snider returned to Pelee Island after having paid a two weeks' visit to friends living at 93 (101 new number) Nassau St., Toronto. travelling September 24th. by the train leaving the city at 7 a.m., going *via* St. Thomas and Comber to Leamington, taking the Str. Lakeside that evening. arriving at the island on the morning of the 25th.

He first complained of being unwell October 4th headache, slight chills followed by elevation of temperature. 101°F. pulse. 120 ; slight nausea, tongue furred ; he continued so for about two days with a little delirium ; upon the 6th he took to bed temperature, 104°F. ; next day (7th) he suffered from persistent vomiting and severe pains in both legs ; on the 8th he had

severe abdominal pain, the fever was lessened. An eruption appeared on the 9th upon forehead and chest, which eruption when seen by Chamberlain, October 11th, was extended pretty well over the whole body, vesicular, umbilicated and pathognomonic of the disease.

The doctor had been vaccinated about 15 years ago. Dr. Chamberlain says not a good mark.

PELEE ISLAND, October 12th, 1889.

A meeting was held by the Local Board of Health of the Township of Pelee, on above date, to take measures to prevent spread of smallpox, a case having been found in the house of Henry Mickle in this township.

Present, Thaddeus Smith, A. M. McCormick, P. M. Cormick, Reeve, and J. H. C. Atkinson, Clerk.

Whereas, Dr. Snider has been pronounced by Dr. Chamberlain, of Leamington, to be suffering from smallpox. Be it therefore ordered by the Local Board of Health, of the said Township of Pelee :

1. That the house of Henry Mickle, in which said patient now is, be isolated and placarded, and that no one but those of the family and nurses of the patient shall enter said house.

2. That all persons who have come in contact with said patient, shall keep themselves isolated from the public by staying within their homes or other house for at least nine days from the last time when they were with him, and that they shall thoroughly disinfect their rooms, clothing and bedding by fumigation, and that all persons are warned from entering any house where those persons are, who have been in contact with said patient.

3. That Robert Little, of the Island Home Hotel, is ordered to close his house against all persons except those who have been already exposed to the disease in said house (the said patient having been removed therefrom before the nature of the disease was known) for at least ten days, and that he shall also thoroughly disinfect his house, bedding and clothing by fumigation, and that the said hotel shall be placarded.

4. That A. M. McCormick, postmaster and storekeeper, be directed to thoroughly disinfect his store and postoffice by fumigation.

5. That T. H. McKee, teacher of No. 1 school is ordered to close said school till further notice.

6. That Griffiths, teacher of No. 2 school, is ordered to close said school till further notice.

7. That all public meetings at churches and other places in the township are forbidden till further notice.

8. That a nurse be employed to attend the above-named patient, Dr. Snyder.

9. That vaccine points or matter be procured and placed at different points upon the island ; and that all persons are required to be vaccinated as provided by law ; and that the following named persons be appointed to do the vaccination, viz.: Griffiths for the north end, Oscar Fox for west side, Mike Diffenback for south end.

10. That 100 pounds of sulphur, one quart carbolic acid and half pound corrosive sublimate for disinfecting purposes be procured for distribution and use by those required to use it.

TORONTO, December 9th, 1889.

MY DEAR DOCTOR.—Having again visited Pelee Island and acted for a period of three weeks as Health Officer of the municipality, it is with pleasure I have to report the occurrence of only two fresh cases during the eleven days which elapsed between October 24th and November 5th, the cases being those of Mr. Arthur McCormick, mentioned as having been quarantined, the other Mr. Wm. McCormick who had been living in the house where Miss Mary McCormick was quarantined and must have been exposed sometime in the early part of the outbreak, that is previous to Dr. Campeau taking charge—as it was certainly not after. Dr. Campeau, of Kingsville, acted as Medical Health Officer from October 17th to 31st, vaccinating at the homes as also at the public stations—and it is no doubt due to the prompt vaccination and well maintained quarantine during the early days of the outbreak that I have to report so few cases and early termination of the outbreak.

During my term of office I made a house to house visitation, recording the names, ages, date of vaccination—appearence of mark, dates to subsequent vaccinations with result—the above record I leave with the local authorities for future reference, if occasion require—in this manner I examined some 504 persons and of these I vaccinated 100.

The houses mentioned as "C," "D" and "E" in my previous report, I thoroughly fumigated and disinfected before the persons quarantined therein were free.

The first case, Dr. Snider left the hospital November 22nd, great care being taken with the disinfection of his clothing and effects as well as that of his person. He being now able to resume professional duties I resigned in his favour—remaining, however, some days longer when I felt a spirit of confidence would have taken hold of the more timid of the inhabitants. Before closing I would like to add a word of praise for the manner in which Dr. Snider attended to those, his fellow sufferers, with him in the hospital, at a time when his own physical condition could but ill bear the strain which his indefatigable efforts placed upon it.

Respectfully submitted,
Yours very truly,

CHAS. S. HODGETT, M.D., L.R.C.P., London.

An interesting point arose in connection with the arrangement made by the Provincial Board with a physician who, though a licentiate of the Royal College of Physicians, London, was not registered in Ontario, to act as a medical officer for Pelee Island. It will be remembered that during the diphtheria epidemic in the Parry Sound District, in the early part of the year, the Board employed for two months two medical inspectors, one of whom was the gentleman employed in the Pelee Island outbreak and the other a final student of high standing from one of our medical colleges. The action of the Board in the matter of the Pelee Island appointment was questioned by the Royal College of Physicians and Surgeons, and an explanation was cheerfully accorded which we trust was satisfactory. It cannot be forgotten that work of the kind undertaken by medical inspectors of the Board is of an unusual, often dangerous and disagreeable, but in the nature of the case of a temporary character. Not only this, but the call for active measures is always sudden and unexpected. In many instances a medical inspector has left home for an infected district within an hour or two of the receipt of a telegram. With no permanent staff for this work, the Board has to depend upon physicians who by accident are in a position to leave home without detriment to the interests of their patients or their own practice. Such are most commonly students finishing their course. Were the Board unable to obtain the services of such it frequently could obtain none, greatly to the detriment of the public interests, since I have at times vainly endeavored for several days to obtain for more difficult and dangerous undertakings the services of such a person as would be satisfactory. Two objects in such work are to be sought, viz.: expedition and efficient action. The credit of the Board can only be maintained by striving after both, and the assurance is freely given to all interested in the maintenance of the status of the profession that the Board recognises that its own dignity and credit will cause it to select, where possible, for its officers those whose registration stamps them with a presumed efficiency and suitability for its work, where such can be had without the dangers incident to delay in obtaining them.

(*c*) **Diphtheria.**—In the Report for 1888, in the report on diphtheria, I discussed in an extended manner the beginning and spread and the measures, in large degree successful I am happy to say, for stamping out the disease in one portion at least of our northern territory. That portion of the Report which belonged to 1889 will not here be referred to further than to say that the fact of there having been but few cases which have since occurred there is in harmony with what seems to have marked this disease in most other parts of the Province. It is yet too early for an examination of the Registrar-General's returns for 1889, but the reports obtained from different sections during the year, and more particularly the reports of Local Boards, lead to the inference that a marked decrease in the mortality from this disease has taken place. What peculiar atmospheric influences have favored this result it may be difficult to adequately recognize, though doubtless such existed, but I think from an examination of the reports of Local Boards it will not be difficult to gather that the most important agency which has been at work has been the isolation of first cases and of the families wherein they have occurred, and of disinfection of the houses and clothing after the disease has disappeared. While it is to be regretted that comparatively few municipalities have as yet supplied efficient means for the removal of first

cases to isolated hospitals or "houses of recovery," yet the advance that has been made in a few instances is little short of extraordinary. Guelph, Brantford and Brockville are leading in this matter, and nothing so well illustrates the truth of the principles which have for several years past been urged by this Board, based upon our own experience in Ontario with regard to smallpox, and in England with reference to both scarlatina and diphtheria, regarding the advantages to be gained in the matter of the saving of life, expense and time, by the removal of patients from their homes and by treating them in isolated hospitals.

The report of the Guelph Local Board presents a phenomenal development in this work, but probably not more than Brantford if we remember the recent period at which the city hospital in the latter place was constructed. The figures for Guelph are given. They are of so much interest and importance that we must give them some special attention.

The Guelph General hospital, as also the St. Joseph's Roman Catholic hospital, have existed for more than ten years, but up to 1884 no provision had been made in either for the reception of contagious diseases. At the General a small building was then erected, but some three years ago an Annex to the General hospital was specially designed and erected for the treatment of contagious diseases.

The town has unfortunately had for nearly ten years a bad record in the matter of diphtheria, and typhoid has appeared and to some extent increased.

The report of the Local Board refers very especially to the cause of this in the almost complete absence of sewers and the increasing contamination of the soil. Although having an adequate public water supply in many parts, it is by no means universally used, while further an area of territory between two dams, as already referred to, maintains a nuisance increasing as the years go on. While these facts make it appear that the work of public reform is undertaken in the reverse instead of the natural order, yet it is of much importance that the results of existing unsanitary conditions are being minimized to the greatest extent possible.

The following figures give the total cases reported and the number of patients suffering from diphtheria and typhoid treated in the hospitals :

GUELPH.

	Case reported.	Deaths.	Treated in hospital.	Per cent. treated in hospital.	Per cent. of deaths.
Diphtheria.....	221	18	138	.62	8·1
Typhoid.....	28	2	23	.85	7·1

It becomes apparent from these figures that three things have been definitely proved: 1st, That a small city (10,000 inhabitants) has not found it any excessive burden to erect a hospital, since two hospitals exist, and in one at least a large and commodious Annex for contagious diseases has been constructed ; 2nd, That no difficulty is experienced in convincing the general public of the gain both to the family and patient of having cases removed from their homes to the hospital for treatment ; 3rd, That a large expenditure of time, money and life has been prevented to the people of the town as individual families, and who have without any sense of burden undertaken the expenditure in their collective capacity.

That the same results are obtained in Ontario as in England, viz.: a relatively decreased death-rate in proportion as the number of cases reported as being treated in isolated wards increases, is very well shown by a comparison of the deaths to cases reported in

Guelph as compared with any other towns and cities in the Province. The following table to illustrate this will prove of interest:

Cities.	Diphtheria.			Typhoid Fever.			Number of deaths per 1000 of population.	
	Cases reported	Deaths.	Per cent.	Cases reported	Deaths.	Per cent.	1889	1888
Brantford	58	15	.25	89	9	.10	14.3	15.9
Belleville	4	0	..	3	0	..	16.4	13.6
Guelph	221	18	.08	28	2	.07	13.0	16.8
Hamilton	62	15	.24	149	6	.04	15.3	16.0
Kingston	52	9	.17	27	6	.22	16.7	11.6
London	34	9	.26	37	4	.10	13.1	14.2
Ottawa	134	61	.45	67	18	.26	22.8	23.9
St. Thomas	12	1	.08	2	2	.1	11.1	12.6
St. Catharines	12	2	.16	27	7	.2	12.6	20.6
Toronto	299	72	.24	273	48	.25	14.4	20.3
Towns.								
Barrie	....	..	..	..	..	..	....	....
Brockville	27	3	.11	23	1	.04	12.0	15.8
Chatham	62	3	.04	35	6	.17	18.0	12.2
Galt	20	1	.05	5	1	.20	9.8	....
Goderich	10	4	.40	..	..	..	8.8	16.7
Lindsay	....	..	..	..	..	..	....	....
Owen Sound	24	5	.20	5	0	..	13.1	10.2
Peterboro'	5	1	.20	3	0	..	....	14.7
Port Arthur	5	0	..	6	1	.16	12.6	13.3
St. Mary's	5	1	.20	3	0	0	6.5	11.3
Trenton	7	3	.42	..	..	..	15.2	12.2
Windsor	5	0	..	4	2	.50	13.4	12.9

Thus we see that with 221 reported cases of diphtheria in Guelph there was a death-rate of only $8\frac{1}{10}$ per cent., and of typhoid, with 28 cases, there was a death-rate of $7\frac{1}{10}$ per cent. Of the former 62 per cent. and of the latter 85 per cent. were treated in hospital.

In Brockville again with 27 cases of diphtheria, of which 50 per cent. were treated in hospital, there was a death-rate of but 10 per cent., and with 59 per cent. of typhoid cases treated in hospital there was a death-rate of but little over 4 per cent.

That similar results are not seen in the cases of such cities as Ottawa would seem due to the fact that a relatively small number of cases of these diseases was reported to the health office since it would seem impossible, that in Ottawa there could have been a death-rate of 45 per cent. from diphtheria.

What the results have been in similar instances in England can be gathered from the following extract, which I have referred to in former reports :

Of evidence of the value of notification and hospital isolation, especially in the case of smallpox and typhus in Salford, no fewer than seven separate importations of the former disease and six of the latter have taken place since the Notification Act was passed five years ago, and yet, in no single instance has either of these diseases gained a foothold in Salford, whereas, in the four preceding years, before notification was compulsory, those diseases invariably spread and did a serious amount of mischief."

Summing up the advantages, as I expressed them before the International Conference of State Boards of isolation hospitals, they are :—

1. It makes the *raison d'etre* for notification evident, and throws the onus of responsibility on the family physician and householder, should disease spread from the house as a centre.

2. It throws an equally great responsibility on the health department if after notification other cases occur in a house either through neglect of immediate inspection of premises and providing local conveniences for isolation of first cases.

3. It supplies an argument for better house isolation since the responsibility of the house isolation, proved by no other cases occurring, is upon the householder, for should other cases occur he cannot fairly object either to a quarantine of the household or to a removal of all existing cases and a thorough disinfection.

4. Should house isolation prove a failure then the health authorities have public sentiment in their favor in enforcing the general provision for removal of all first cases.

5. It does away entirely with the opprobrious, vexatious and useless methods of placarding, since the method is unnecessary where after a statement of the requirements of the law, householders willingly remain quarantined, or useless, for if a patrol be required by his presence to enforce quarantine, then the placard is superfluous.

6. It is in the highest sense humanitarian and economical. It is in many instances absolutely impossible for the mother of a large family to nurse *c. g.*, a case of diphtheria, and attend to the many other household duties.

7. It is cruel to permit a poor family to be with an almost certainty afflicted in all its susceptible members with disease so fatal, and it is unjust and absurd to expect a wage earner to be prevented from earning the necessaries of life, while with almost absolute certainty house quarantine will extend the area and period of sickness, inflicting as well unnecessary doctor's bill and a tolerably certain undertaker's levy.

That the views which are here and have been before advanced regarding the advantages of isolation hospitals are rapidly spreading is seen in the fact that out of these 24 towns, 10 at least having hospitals have had contagious cases treated within presumably contagious disease wards or annexes, while some other towns have at least isolation hospitals for smallpox.

Regarding the year's record of diphtheria, however, it is pleasing to have to state that, with the exception of the severe outbreak in the frontier district of Parry Sound, an extended report on which was contained in last year's report, the year has shown an evident decrease in the prevalence of this veritable plague of our municipalities.

It would appear that this is very largely due to the more correct views that are yearly spreading amongst the medical profession and the general public regarding the contagious nature of the malady, and of the insidious methods by which, owing to the lingering nature of the contagion in the air passages, the *materies morbi* is disseminated.

The results of some of the most recent investigations regarding this disease are extremely interesting.

In the last Report of the Medical Officer of the Local Government Board of Great Britain, Dr. Klein has published the results of an extended series of investigations into the bacterial origin of diphtheria, starting from the point of endeavoring by experimental evidence to determine the value of the discovery by Loeffler of the bacillus of diphtheria.

Though not confirmatory of Loeffler's researches they are interesting as tending to elucidate certain obscure relationships which seemed to have existed between diphtheria in man and by no means infrequent diseases in the lower animals.

It will be seen that the experiments point to a different microbe and one occurring in a manner different from that which Prof. Mitchell Prudden, of New York, claimed as causative of diphtheria in a number of experiments made by him with a streptococcus found in the buccal tract of persons either sick with diphtheria or in some cases who had been exposed to air bearing diphtheria germs, as in the wards of the Sick Children's Hospital.

We do well, however, to recognize that in every case the disease has been shown to be communicable by inoculation ; hence for prophylactic purposes it becomes manifestly necessary on the part of physicians and officers of health to adopt the most complete isolation and disinfectant precautions which are possible.

(*d*) Enteric (Typhoid) Fever.—The past year which, during the later summer and autumn months, was in many parts of the Province favorable to the prevalence of this disease cannot be said to have developed it in any locality to that extent which would fairly entitle it to be termed epidemic.

While this may be true in a general way, yet the reports which have been received from a number of the smaller towns and villages indicate that with added years the soil pollution of these places is becoming more complete and that only favorable atmospheric conditions are required in order that the poison of the disease may become fully developed and carry on its deadly work.

The following letter is an illustration :

PENETANGUISHENE, August 31st, 1889.

Dr. Bryce :

DEAR SIR,—There seems to be an epidemic of typhoid fever in this town at present. There have already been five fatal cases and new cases developing almost daily. I think the sanitary conditions of this town need looking after very badly. Hoping this will receive your prompt attention,

I remain,

Yours respectfully,

W. F. THOMPSON.

The following letter was received in answer to enquiries made by me of the Local Board :

PENETANGUISHENE, September 5th, 1889.

P. H. Bryce, Esq.,
Secretary Provincial Board of Health, Toronto :

DEAR SIR,—In reply to your favor of the 3rd inst. I would say that during the month of August there were two deaths from typhoid fever. The first was a young man and it is supposed the attack was caused by impure water. The second was a Mrs. T. The reason ascribed for her illness was that the cold and dust from the furnace emptied into her bedroom and took its supply of air from the store cellar where all kinds of vegetables were kept and fish were packed. I may say that there were two deaths during July, also both supposed to be from impure water. The whole of these cases were confined to a small area of the town and I may say the Local Board are making a thorough investigation and are enforcing the regulations of the health by-law in regard to privies, etc.

I am, your obedient servant,

H. JENNINGS,

Sec. Local Board.

While in several towns where house-plumbing is defective, in neighborhoods as in small towns and suburban localities where slaughter-houses, knackeries, etc., exist, we may find cases of typhoid ascribed very properly to such exciting causes, yet it may fairly be said that the letter of the Secretary of the Penetanguishene Board gives in a few words the story which can be told of the hundreds and thousands of outbreaks of typhoid which appear in isolated groups in cities, towns or country surrounding some common source of water supply.

Why this should be is fully explained in a preceding section on underground waters, and hence need not here be further discussed ; but not until wholly new views exist in the minds of people regarding the sources of water and of their pollution can we hope to find a notable improvement in this matter.

3. Outbreaks of Contagious Diseases in Animals.—In the special reports succeeding this general report of the Secretary will be found references to one or two outbreaks of diseases amongst animals, which were brought under the notice of your Secretary.

(*a*) Cerebro-Spinal Fever.—The first of these was a localized but fatal outbreak of what seemed to be contagious cerebro-spinal fever. The investigation seemed to localize the cause in the stable where the horses were kept, and a common cause seemed to have operated on all as they took sick within a few hours of one another. A developed septicaemic poison due to putrefaction of the accumulated filth of the horse mangers during a sudden accession of hot weather seemed to be the most reasonable explanation.

Another serious and widespread epidemic of a very unusual character appeared in horses in Kent and Lambton counties during May and June, the breeding season. It was a venereal disease with affinities to gonorrhœa, and the study of its character and phenomena became the subject of a commission of enquiry and report by your secretary which has already appeared in pamphlet form. The investigation, and legislation which has resulted therefrom have been extremely successful it would seem in lessening the extent of the disease during the present breeding season.

(*b*) The Flour Moth (Ephestia Kuhniella).—A third outbreak of a novel and unusual nature, which appeared as an insect plague, was the occasion of active measures being taken under section 99 of the Public Health Act. Though causing costly and troublesome measures for the extermination of the plague it is pleasing to be able to say that so far as reports have been received there has been no re-appearance of the insect as a pest this season.

The following is a copy of the bulletin published on the subject:

At a time when the milling industry of Canada was limited to the work of grinding with the end of supplying the local demand for flour and feed, the use of the various grades of wheat and other grains, obtained from the area of country in the neighborhood of different mills, was all that seemed necessary. As, however, means of transit such as railways and waterways has increased, milling industries have developed to such an extent as that large mills have to go to distant parts of Canada or the United States for their supplies in response to the demands upon their business, as regards both quantity and quality. With transhipments of grain from outside regions there have been introduced not only the grain products of varying quality, but there have also been at times associated with such importations the seeds of plants and the eggs of insects peculiar to these countries, and which have grown amongst or have been parasitic upon the various grains with which they have been introduced. In addition to weeds and insects, at times injurious, introduced in this manner, we find that insects feeding upon and peculiar to these grains have at times been imported through the development of those branches of business which utilise either the raw grains or the milled products of starchy foods, especially adapted to children's foods, such as tapioca, cornmeal, semolina, etc. Other means of distribution of these insects foreign to Canada is found in the transhipment of flour in bags, and the return of said bags, which may have been for a time stored in a ship, granary or store-house, etc., infested with such insects.

In an article on "Screenings" in the Report on Injurious Insects for 1889, published by the Agricultural Department of the Privy Council of Great Britain, Miss E. A. Ormerod, the entomologist, says with regard to the Hessian Fly:

"Another possible method of introduction was transmission in chaff and rubbish from foul corn imports, and this probability was greatly strengthened when we found that the 'flax-seeds' were detached from the straw in great numbers by our threshing machines, and that, in the process of cleaning the corn, these 'flax-seeds,' or chrysalids, were thrown down with the light weed-seeds and rubbish. We thus learnt that they *could* be detached, and thus we arrive at the point that where corn is sent over foul, with the chaff, dust, rubbish, etc., still in it, to the amount to which it often comes, that it is highly probable that if the crop out of which the corn was threshed was infested by Hessian Fly the infestation will be imported, and will be spread abroad by distribution of cheap screenings.

"But beyond what may happen as to introduction of this one special crop-pest, in addition to the weevils, beetles, etc, which it has long been known infest imported cargoes, as well as granaries on land, it appeared that in what may be called the 'crop rubbish' thus imported there was broken straw, masses of caterpillar-workings, and bits of broken ears, with other impurities quite suitable for transmitting crop-insect infestation, besides other matters, such as ergot, weed-seeds: infested crop-seeds, as maize, beans, etc.; besides a large admixture of bits of dry dirt and stones, and also some amount of coal, iron, or large nails, and wire."

It further appears that foreign grains, and the ships which have carried them, as, for instance, those from southern Russian ports, Egypt and India, are not only dirty as regards dust and earthly products, but also contain chaff and other unwinnowed products, as well as the eggs or other stage of the insect pests which infest them. Thus a correspondent is quoted in the above mentioned Report as saying regarding barley:

"The Egyptian is the poorest. . . . It often comes full of weevils and mites, and is sometimes not so well cleaned as this sample, being more "taily" or having the tails broken off it in abundance, and sometimes particles of straw. The debris taken out of Indian wheat is the chief source of danger of carrying insect-life or spreading it. The manure of pigs fed on swill is a fruitful source of weeds afterwards."

Again—"Thus Russian can never be depended on as a basis for first-class flour. It is a pity that it is so; because if the English miller could get Russian wheat clean, America could not injure her so much by her shipments of flour." And again:

"The poverty of the growers will not allow them to use expensive cleaning machinery, while again the keen competition among shippers tends frequently to the receiving grain direct from the grower in bags, and shipping it right on by vessel, instead of, as formerly, taking their purchases into warehouse, and cleaning and mixing the various small lots into one uniform bulk. This especially applies to California, where much of the wheat, if not all, is threshed off the field and bagged at the same operation, shipped in same bags of various qualities, often full of straw, etc., and then piled on the quays and bulked in Liverpool on arrival."

And the same correspondent remarks:

"Considerable loss is often experienced by importers in this country when grain is shipped in such a dirty state; owing to the length of passage the grain becomes very warm (especially in summer time), the weevils often exist to a very serious extent, doing great injury, and causing great waste and heavy loss to importers.

"Millers in this country, with their greatly improved machinery, easily wash and clean such descriptions of grain, and are, by their practical knowledge, well able to protect their own interest in what they buy from importers, the latter running the great risk of the evil effects of weevils, etc., while in passage. Millers would much prefer having to deal with good, sound, sweet, clean grain, and pay extra prices for it.

"Shippers do not take into sufficient consideration that they pay freight and charges for such large percentage of dirt that they ship, or that they would get much better prices for their corn if they kept at home all the soil and extraneous matter alluded to."

From other observations contained in the letters quoted in Miss Ormerod's report, it appears that the unnecessarily dirty character of many of these grain cargoes has caused representations to be made by Chambers of Commerce, as at Bombay for instance, in those countries from which exports are sent, with a view to checking these admixtures of dirt and other impurities; while combinations of importers and millers have taken measures to stop such adulterations, by having grain inspectors and a scale for establishing standards of price according to the quality of a cargo, as regards impurities.

These facts have caused Miss Ormerod to remark:

"Therefore, as it appears that the absence of refuse in the corn cargoes would not injuriously affect the importers or millers, but, on the contrary, that clean cargoes would be preferred, it is allowable to draw attention, agriculturally, to the great risks that are run by purchase of what is (or in all probability may be) infested refuse, and thus in various ways allowing noxious insects, eelworms, fungi, or weeds to gain a footing."

The information which we gain from these various quotations of the modes by which the interests of English millers and agriculturists are endangered amply illustrates the position occupied by Ontario millers in relation to the duties which the growing demands of their business lay upon them, of protecting at once their own industries, and the high position which Ontario grains hold with regard not only to quality of the kernel, but also to freedom from dirt and refuse. Canada barley has long held a foremost place in the foreign market; while in the numerous quotations from letters received by Miss Ormerod from English merchants and millers, it will be seen that not a single reference is made, amongst the many countries mentioned, to Canada as being a source of impure grain.

In order, however that such a position be maintained, it is necessary to remember that increasing commerce, as increasing travel and immigration, has its attendant dangers. By the latter contagious diseases are introduced, while by the former infectious diseases of horses and cattle, weeds and parasitic diseases of plants, and insects injurious to grains obtain a foothold in countries previously free from them. We have illustrations of each of these in smallpox and cholera by immigrant ships, pleuro-pneumonia and anthrax in imported cattle, equine syphilis in imported horses, quick-grass and black-knot amongst plants and trees, and the Hessian fly, the midge, etc., amongst grains.

To protect ourselves then against such possible evils, knowledge of the dangers to be avoided, the avenues by which they approach, and the means by which they are to be opposed, is essential.

To this end the Public Health branch of the Department of Agriculture of Ontario, under instructions of the Minister, the Hon. Charles Drury, has issued this Bulletin to the millers of Ontario, informing them of the existence of an imported insect pest, known to entomologists as *Ephestia Kuhniella*, and at the same time describing its appearance and habits. In the interests of the important milling industry, the Department trusts that all millers, merchants or others will, at their earliest opportunity, supply it with any information which is likely to lead to the detection of the presence of this pest in any places at present unknown to the Department, and of any other insects whose presence is found injurious to either grain, flour or machinery. The following facts have been gathered through the investigations which have during the past six weeks been carried on with reference to the extent of prevalence, of the ravages and of the entomological characters of *Ephestia Kuhniella*.

The following statement is made by the manager of the mill in this Province in which the pest first appeared :—

"The first appearance of the *Ephestia Kuhniella*, or flour moth, that we remember seeing was during the month of March last, 1889. The moth was seen flying about near a steam pipe in the basement of the mill and near the w. c. Little attention was paid to it, as from appearance it did not indicate any danger. In April there was an appearance of a few moths on the different floors of the mill, even at the top, but still there was nothing suspicious. In the month of May we were troubled with a few worms in some of our goods, and in June more of them appeared. In July they increased rapidly, and then we began to suspect they were from the fly which we had seen in the mill during the previous months and which was steadily increasing in numbers. About the middle of July we shut down for a day or so ; took the clothing from our bolting reels and washed the inside thoroughly with soft lye soap and lime. We did the same with the elevators. When we started up again every corner and part of the mill had been thoroughly cleaned, as we supposed, and we commenced to work again, but after about four days we found our bolting reels, elevators, etc., worse than before. They were literally swarming with webs, moths and worms, even inside the dark chambers of the reels. We shut down again and made a more thorough cleaning by washing, etc. While this was going on we found there was no use to try and clear ourselves of the pest as the mill walls, ceilings, cracks, crevices and every machine was completely infested with moths, cocoons and caterpillars and there was no use going on. It then occurred to us that a plague like one of the plagues of Egypt was upon us. The moth was different to any of which we had had any knowledge or experience, and we decided to apply to the Dominion Goverment for relief and assistance. We addressed the Government entomologist, Mr. Fletcher, and sent him samples of the moth, caterpillars, webs, etc., and received a prompt answer which considerably alarmed us. This letter was followed by others almost daily from Mr. Fletcher and a visit from Prof. Saunders on the 17th of August. Mr. Fletcher visited us also on the 27th of August ; but in the meantime Mr. Blue the Assistant Minister of Agriculture for Ontario visited us and took in the whole situation. It was explained to Mr. Blue that the Dominion Government had been appealed to by us, through Mr. Fletcher, the Dominion Government entomologist, for assistance and remuneration for the loss we had sustained. Mr. Blue considering it to be a matter with which the Local Government had to do, brought Dr. Bryce, the Provincial Medical Inspector, and submitted the matter to the government for action. Afterwards Dr. Bryce and Prof. Fletcher came together and finally the whole matter was left in charge of Dr. Bryce and the Provincial Board of Health.*

*Mr. Blue communicated the appearance of the pest to the Provincial Secretary on the 25th of August, and after referring to the dangerous nature of the insect, as seen in its ravages at the infested mill, said : "I am convinced that the stamping out of the pest is a matter of very great importance to this Province, and to this end prompt and vigorous action is required. I am not clear, however, whether action in the case rests with the Local or with the Federal authorities. This is a question upon which the law officers may be consulted. If in their view the Dominion Government alone has power to act you will doubtless report the fact to the Secretary of State ; but if the power and responsibility rest with the Local Government it is desirable that whatever steps may be deemed advisable in the premises should be taken forthwith." The matter was referred to the Attorney General's Department, and upon its advice an Order in Council was passed directing that the matter be "forthwith referred to a committee of three members of the Provincial Board of Health, and that these, with the Secretary of the Board, be directed to take immediate steps for the suppression of the pest, adopting such measures as may be thought advisable, pursuant to the provisions of the Public Health Act." [Ed.]

"In the meantime we took down our machinery and subjected it to steaming. Every part was thoroughly steamed. The mill was swept down and subjected to sulphur fumes. The walls, ceilings, etc., were cleaned, and elevator spouts and loose wooden work burnt up. Paper bags and hundreds of dollars worth of goods were burnt in the furnace, while the other bags, elevator belts and cups were boiled for hours in a chaldron of water. The machines and all parts that were not destroyed were then burnt by means of a kerosene torch, which flamed and smoked through and around every part of them until we considered we had everything clean and ready for putting together again.

"But on the 19th of September the Local Government passed an Order in Council compelling us to take more stringent steps, or rather ordering the Provincial Board of Health to take immediate steps for the suppression of the pest. This Act was approved of by His Honor, the Lieutenant-Governor, who signed the Order in Council, and on the 20th of September we received an order from Dr. Bryce which stated that before placing our machinery in position we should subject it to a thorough disinfecting process in a strong room so arranged that steam under pressure might be drawn or driven into it.

"In compliance with this order we at once constructed a tight steam box 6 ft. wide, 6 ft. high and 12 ft. long, and attached a steam pipe to it from the boiler. In this box we put every machine, and even our mill stones and iron rollers. This process was very expensive and took up considerable time, as we were over a week at the process and were delayed in the placing of our machinery. The Board of Health visited us in a body during the time this process was going on and pronounced it a success. This was all done not only in our own interests, as was pointed out in the letter of 20th September from Dr. Bryce, but in the interests of the public health and commerce of the country.

"Having now got to the position which enables us to go to work again after two months loss of time and the loss of machinery, fixtures, stock and expense, we have arranged for remedial measures to prevent the reappearance or destruction of the pest should we ever be again attacked. We have erected a steam standpipe with hose or other connection on each flat of the mill building. By shutting up all doors and windows of each flat and turning on the steam simultaneously to each floor the whole building can be filled with hot live steam sufficient to kill anything. This will rust all bright parts of the machinery, but to remedy this we intend using oil on them, should we ever be under the necessity of resorting to the measure.

"Another purpose of this steam standpipe will be in cold weather to let on sufficient steam to moisten everything and part of the building at night, and then throw open the windows for the night and let the frost penetrate so as to kill any eggs or insects that may have become lodged in unseen parts.

"By these measures, with plenty of light, thorough cleanliness, a cold mill, and caution in taking in stock and old bags, we hope to keep free of a pest which has given us so much trouble and loss."

What the characters are which mark the insect will be gathered from the following diagrams* and a description of it taken from Miss Ormerod's report, supplemented by statements made by Mr. J. Fletcher, Dominion Entomologist, and by our own observations together, with such other sources of information as have been available.

Miss Ormerod says: "The color of the fore wings may be generally described as of rather pale grey, with darker transverse markings, and the hind wings are peculiar for their whitish semi-transparency, with a darker line from the point along a part of the fore edge.

"On examining the infested flour early in January the mass was so completely spun together that, after pulling some lumps of it away, I found that the rest hung down in rag lumps or clots so felted together by the caterpillar's web that but little flour remained in a loose state. From a small mass of these clots, little less than two inches and a quarter, by two inches across, and half an inch deep, I could only by repeated shakings get about a teaspoonful of flour. The spun-up masses were occupied by live caterpillars, some crysalids living and dead, and remains of dead moths.

"The caterpillars varied in size from two-eighths up to five-eighths of an inch in length, and correspondingly in color, the younger ones being of flesh or pale red color,

and the largest almost white; the shape cylindrical, somewhat slender, with 16 feet, that is, three pairs of claw-feet, four pairs of sucker feet, and a very well-developed pair besides beneath the tail, by the help of which, although the largest of the larvæ were sluggish, the younger travelled nimbly, and could move backwards or forwards at pleasure, or were able to attach themselves at once to a foreign substance, as the finger or hand. The head yellowish brown, darker in front, and with dark brown jaws; a transverse patch on the segment next the head, this rather pale yellowish brown, with a faint pale central line dividing it from back to front, and (in the oldest specimen) a small brown spot on each side of the segment below the patch. Along the back, excepting towards the head and tail, were four small dark dots on each segment, above, two on each side the centre. On the segments near the head the spots were arranged more transversely, and at the tail, immediately above the sucker-feet, was a brownish, oval or somewhat triangular patch (the anal plate). On the preceding segment one transverse row of spots varied somewhat in different specimens; the largest was in the middle, with a smaller one on each side, occasionally one below, which would make five altogether; but sometimes the lowest pair was absent, sometimes the middle large spot was not entire; conjecturally the marking differed with the age of the caterpillar. On the preceding, that is, the eleventh segment, there were two clearly-defined brownish spots, and along each side of the caterpillar was a row of dark dots, one on each segment.

"The caterpillar was slightly sprinkled with pale hairs or fine bristles, and had such a capacity for catching and retaining a covering of flour that I was obliged perpetually to remove it with the moistened tip of a finger to obtain a clear view of the markings.

"The chrysalis, which was lying in a silken cocoon of spun-up flour, showed the chief points of the form of the coming insect plainly—the color bees-wax below, shading to reddish brown on the back, and reddish brown also at the end of the somewhat prolonged, slightly-curved tail, which ended bluntly or cylindrically; the eyes of a darker shade of red. There were remains of dead, partly-developed moths or chrysalids in the box, but I could not make sure whether, as thought not unlikely by Prof. Zeller, these had been destroyed by their caterpillar brethren—the size and power of their jaws make the cannibal habit appear very probable. I had not opportunity of observing how long the chrysalis state lasts before the moth appears from the chrysalis condition, but this time is given by Prof. Zeller as three weeks.

"The attack may be considered as going on constantly where temperature is suitable, for we have notes of appearance of the moths in May, June, July, November, and December; and intermediate observations of larval or pupal presence point to this, which, when once established, is indeed a mill or flour *scourge*, as being a year-round pest."

In order that these descriptions may be more intelligible to the reader unfamiliar with the life-history of insects, it may be said that insects undergo in their development, from the egg to the adult or completed state, a series of transformations. This series begins with the hatching of a minute egg (of which the adult insect, in this case a moth, lays—it may be a hundred or more), incased in a hard outer-covering or shell. The egg-shell having thinned and burst, the larva or grub stage succeeds. The larvæ of butterflies and moths are called caterpillars. As soon as hatched the larva feeds voraciously, and grows rapidly on the kind of food peculiar to it—in this case starchy foods, as the flour of rice, cassava, tapioca, Indian corn, as well as those flours and grains containing large amounts of gluten, as wheaten flour, oatmeal and barley-meal. During this stage the caterpillar stores up fat, out of which the tissues of the new body of the pupa and imago (cocoon or moth) are to be formed. Larvæ moult or change their skin four or five times, notably in the case of active species. A few days before the pupa stage succeeds the larva becomes restless, stops eating, and deserts its food, and usually spins a silken cocoon, or makes one of earth, chips or (in this case) of flour, in which the caterpillar is enveloped. This larval stage is that in which *E. Kuhniella* becomes most troublesome to millers, as so well described by Miss Ormerod and the correspondent in whose mill it has been so prevalent in this country. The pupa or quiescent stage lasts for weeks or months, according to the species of insect and the temperature in which it lives. When the stage is short, as has been found to be the case with *E. Kuhniella*, the

multiplication of individuals becomes very rapid, as is unfortunately too well illustrated in the statement of the correspondent already given.

When the pupa stage is completed, this dull chrysalid breaks its envelope and the mature winged insect goes forth. After completing its development the sexes meet, and fertilization of the female having taken place the male soon perishes, and the female lays its eggs in the food intended for the nourishment of the larva when hatched out from the egg.

From the foregoing it will be apparent that the moth may not only be transported from one place to another in any one of its various stages, but that search for its presence in any one or all of these must be made where its presence is suspected. It will at once be seen how great are not only the dangers of its transmission from one mill to another and one locality to another, but also how many are the difficulties attaching to its detection, while as yet only a few individuals may have been introduced into a warehouse or mill. With what rapidity the *Ephestia Kuhniella* develops under favorable conditions nothing will better illustrate than the correspondence from a sufferer therefrom already published. When it is stated that a large warehouse, some 25 feet wide, 75 feet long and four storeys high, became literally alive with moths in the short course of six months, while thousands upon thousands of the cocoons were found adherent to the walls, joists, posts, ceilings, and in every nail-hole, cracks in floors, partitions, machinery, furniture, throughout the whole building; while in sample-boxes of card-board, in small and large bags, in flour stored anywhere throughout the building, it was abundantly present, it will be understood what millers have to expect to encounter if they neglect the most vigorous measures to destroy the first moths which at any future time may appear on their premises. To illustrate further the difficulty of overcoming the pest, once introduced, it may be stated that several men have been at work in the building, from which our correspondent has removed his machinery, for over a fortnight in burning all woodwork, as flooring, fixtures, etc., sweeping down walls and destroying the rubbish, the walls thereafter having to be washed down and the floors scrubbed with disinfectants, while during the process many pounds of sulphur have been burned in order that the fumes may aid in the work of destruction.

We may now refer to the measures necessary for preventing its introduction at any future time into Canada, and for the suppression of this pest where now existing in this Province.

1st. The foreign source of the pest must be remembered. Klein calls it the pest of the Mediterranean, and that this is so seems proved from the fact that the almost certain avenue of its introduction to this Province was in milled goods, imported as children's foods, consisting of Italian semolina, Indian cassava and Brazilian tapioca. It seems an essential, if we are going to avoid danger from this source, that no goods or bags be allowed to enter Canada from Mediterranean ports unless they are first quarantined in a warm place, for a number of months, thereby giving the ova, if present in them, an opportunity to hatch out.

2nd. All bags which have already been used for transporting grain, flour or meal should be prevented entry into Canada unless subjected, under inspection, to thorough boiling or superheated steam. This, probably, is of all dangers the greatest, and one which the Dominion Government could carry out without any unpleasant delay or loss being the result.

3rd. Every miller in Canada, but especially those engaged in export and import trade, should make himself thoroughly acquainted with the appearances and characters of the moth at its various stages, and take means to at once destroy any individuals before they have had time to multiply. In this case a little prevention is worth many hundred times the same amount of cure. They may further facilitate the work of prevention by informing this Department at once of any outbreak and of the avenue by which the pest has entered. But assuming the pest to have been introduced, there are a number of points to be attended to.

(1) Destroy the moths. This can be done by closing the windows, doors or other apertures of the building, and, night after night until all evidences of moths have disap-

peared, burn sulphur by placing it in shallow pans upon a number of heated stoves, say small coal oil stoves, in different parts of the building, and putting a match to it. *The note below describes another convenient mode of creating sulphur dioxide fumes.

(2) Search for evidences of the larva or caterpillar in all packages, bags, etc., of flour and meal, and, wherever found, at once superheat the flour in a dry kiln. Spread it out in a thin layer so that the heat can reach it and the packages, boxes, etc., containing it.

(3) Under no circumstances sell this material to other dealers, whether to mills or produce stores, but have it treated with boiling water or steamed and fed to pigs.†

(4) Where webs have appeared, either in the packages of meal and flour, in the bolting-cloths and carriers, or in deposits of dust on ledges, along the walls, etc., it may be deemed certain that the larva has taken on the chrysalis stage. Hence it becomes necessary to make a close search in all these places for the cocoons or little masses of flour glued together, of say three-quarters of an inch in length. These swept down can readily be gathered up and burned.

It has, however, been already pointed out that owing to the habit which the larva has of retiring to some crevice, when not hidden in a package or deposit of flour, before passing into the chrysalis stage, we find them in innumerable places quite impossible to be reached by any brushing down process.

Two ways then only are left for overcoming this difficulty. The one that first suggests itself is that of waiting till the chrysalis is burst and the moth appears and then to kill the moth.

This, doubtless, may be followed with good results, *i. e.*, have the first moths appearing destroyed by hand and by subjecting the affected portions of a mill or building to repeated treatment with the fumes of burning sulphur every night when the works stop. If this be persistently followed out but little development of new forms will take place. It must be remembered that this work must be persistent and thorough, abundance of sulphur burnt again and again being the sufficient condition of success.

Where, however, the larvæ have as it were gained possession of bolting-cloths and carriers treatment with steam under pressure driven throughout all parts of the bolting-cloths, carriers and other machinery has been found very useful in lessening the inconvenience from the spinning of webs and thereby the clogging of the machinery. The walls, floors and ceilings may further be treated with advantage by first brushing down all dust and thereafter spraying them with a solution consisting of a drachm of corrosive sublimate to each gallon of water, by means of a gardener's force pump. Treatment with fumes from burning sulphur while parts are yet moist from this washing down will greatly aid in the destruction of any larvæ or cocoon forms which may be reached.

* To prepare sulphur fumes: Place a metallic dish containing hot ashes on some support in a pan of water, or place in an old pan or other vessel a bed of ashes at least six inches deep and about 15 inches in diameter and place the sulphur and saltpetre in a slight depression in the centre and ignite. The proper proportions are 3 lbs. of sulphur and 3 oz. of saltpetre per 1,000 cubic feet of air space. All doors, windows, and other openings should be tightly closed before the sulphur and saltpetre are ignited.

† (1) Any medical health officer or sanitary inspector may, at all reasonable times, inspect or examine any animal, carcase, meat, poultry, game, flesh, fish, fruit, vegetables, grain, bread, flour or milk exposed for sale, or deposited in any place for the purpose of sale, or for preparation for sale, and intended for food for man; the proof that the same was not exposed or deposited for any such purpose, or was not intended for food for man, resting with the party charged; and if any such animal, carcase, meat, poultry, game, flesh, fish, fruit, vegetables, grain, bread, flour or milk appears to such medical officer or inspector to be diseased, or unsound, or unwholesome, or unfit for food for man, he may seize and carry away the same, or cause to be seized and carried away, in order that he may cause it to be destroyed or so disposed of as to prevent it from being exposed for sale or used for food for man.

(2) The person to whom the same belongs, or did belong at the time of exposure for sale, or in whose possession or on whose premises the same was found, shall be liable to a penalty not exceeding $100 for every animal, carcase, or fish, or piece of meat, flesh or fish, or any poultry or game, or for the parcel of fruit, vegetables, grain, bread or flour, or for the milk so condemned; or, at the discretion of the convicting justices or magistrate, without the infliction of a fine, to imprisonment for a term of not more than three months. 47 V., c. 38, s. 39.

Chlorine fumes may be used with equal benefit under those conditions where burning sulphur may create an added element of danger from fire.* In place of the corrosive sublimate solution, the following solution taken from the report of the Dominion Entomologist, James Fletcher, F. R. S. C., for 1885, is recommended :—

"*Soap Emulsion.*—An emulsion may also be made with soap. The most satisfactory formula, as given by Prof. Riley, is as follows :—

Kerosene	2 gallons.
Water	1 do
Common soap, or whale-oil soap	½ pound.

"Heat the solution of soap and add it boiling hot to the kerosene. Churn the mixture by means of a force-pump and spray nozzle for five or ten minutes. The emulsion, if perfect, forms a cream, which thickens on cooling, and should adhere, without oiliness, to the surface of glass. Dilute before using, 1 part of the emulsion with 9 parts of cold water. The above formula gives three gallons of emulsion, and makes, when diluted, 30 gallons of wash. The kerosene and soap mixture, especially when the latter is warmed, forms, upon very moderate agitation, an apparent union ; but the mixture is not stable, and separates on standing or when cooled or diluted with the addition of water. A proper emulsion of kerosene is obtained only upon violent agitation. It is formed not gradually, but suddenly. The temperature should not be much above blood heat. Prof. Riley lays great stress upon the fact that all who use kerosene as an insecticide must bear in mind that it is only a safe remedy when properly emulsified, and he maintains that all failures have resulted from carelessness in making the emulsion."

We have detailed at some length the history of the introduction and spread of a pest so serious as to cause alarm to all millers who have unfortunately had any experience with it, or seen the conditions existing where the moth had been introduced even for only a few months. We have illustrated the appearance of the insect, have given in detail its habits at different stages of its life-history, and the methods which have been adopted by ourselves or others for dealing with it at its various stages, and have indicated the results obtained up to the time of writing. But much more is to be done. We cannot yet be sure that it has wholly disappeared from those centres where its presence is known ; and it is only too possible that it has made its appearance in other mills and produce stores where its limited prevalence and ignorance of its character have caused it to be overlooked. For assistance in discovering the latter we depend upon the intelligent observation of those most interested—the millers and produce men ; for dealing with it in places where already known or yet to be discovered we promise such practical assistance as the great interests at stake demand and the means at our disposal make possible. Such are some of the principal matters which have occupied the attention of the Board during the year. Notable progress in the various departments of the work are apparent, but especially in the field of scientific investigations and executive work in the setting in motion the machinery of the Act for stamping out disease and removal of sanitary evils. There remains a felt need in the facilities necessary for obtaining regular and systematized information regarding outbreaks of disease and deaths arising therefrom. It is to be hoped that in conjunction with the Dominion and other Provinces a comprehensive scheme will be shortly elaborated whereby Provincial Boards will be able to obtain such statistics at such early times as will enable it to take prompt action towards limiting and suppressing even localized outbreaks.

Trusting that my report will commend itself to the Board.

I have the honor to be,
Your obedient servant,

PETER H. BRYCE,
Secretary.

* To prepare chlorine fumes : Mix in a glazed dish and place on a stove or other heating surface, peroxide of manganese, 1 part ; sulphuric acid, 2 ; chloride of sodium, 3 ; water, 2 ; or more easily by mixing 3 lbs. of chloride of lime and 3 lbs. of hydrochloric acid for every 1,000 cubic feet of space.

SPECIAL REPORTS

BY

COMMITTEES OF THE BOARD.

REPORT ON THE OUTBREAK OF SMALLPOX IN ELGIN COUNTY.

GENTLEMEN,—Being informed by telegraph of the fact that smallpox was spreading in Southwold and adjoining townships of Elgin I visited the city of St. Thomas on March 2nd, and having met the Local Board and discussed the situation, I proceeded the next morning to Fingal, having on the way called upon Mr. Casey, M.P. for Elgin. I found the following condition of affairs:

Public places, as skating rink, churches and school had been closed; sales had been postponed; the people exposed to the disease at the Eustace house were under surveillance. No sanitary inspectors however, were actually appointed, although members of the Local Board were doing what they could, and the medical health officer appointed had resigned, and a man had come to an infected house to act as nurse from St. Thomas, and was acting without being under any regulations of the Board. Cases springing from the Southwold case existed in London city and adjoining townships.

Some difficulty had been experienced by the Board in finding a physician to attend to the cases. The local physicians who had had a certain amount of odium cast upon them owing to the fact of their having failed to recognize smallpox in the several first cases, were not employed to attend the cases. Some days previous to my visit Dr. McLay, of Aylmer, had been employed by the Board, owing to his reputed experience with the disease. I met this gentleman and learned from him that he had been seeing cases for several days. As I was not fully satisfied that the organization was as complete as was desirable, I visited Shedden, and having met Dr. J. H. Howell, who had been acting as a public vaccinator for the Board, I pressed him to accept the position of medical health officer. Thereafter we visited the reeve and met several members of the Board all of whom had being doing their utmost to limit the spread of the disease by preventing persons from infected houses going abroad, it not having been up to this time found possible to get men to act as sanitary inspectors or police.

The council appointed Dr. Howells medical health officer the next day, and on my return to St. Thomas I requested the Local Board there to obtain if possible men who could be depended upon, to act as sanitary police for the township. On my return to Toronto, I succeeded in obtaining the services of a person who had previously acted as a sanitary policeman under this Board, for the work of the Local Board of Southwold. While it is regrettable that so many cases have occurred from this outbreak, there having been in all 43 cases and 12 deaths, yet it must be remembered that it was not more than a fortnight before the time of my visit that the Local Board had had any knowledge of the outbreak being smallpox, and that at the time of my visit there had been 26 cases resulting from the outbreak and 7 deaths. Being unable through illness to go a week before my visit, Dr. McKay, Woodstock, at my request went to Fingal and found the Local Board becoming organized and doing all they could to stop the disease. The chairman and secretary of the township Board had indeed been constantly engaged at the work, to them new, of health officers, and showed a zeal for their work and for the public health worthy of the highest praise.

On my return the next day to St. Thomas, a meeting of the Local Board and council had been called, and heard my report regarding the state of affairs in Southwold, which is adjacent to the city. Dr. Van Buskirk had been appointed to assist Dr. Tweedale the medical health officer in doing public vaccinations, and investigating all suspected cases; and sanitary police had been placed on all the roads for challenging persons coming from the infected districts. The Compulsory Vaccination Act was at my request enforced, and free vaccination thereafter ordered to be carried on. The site of a proposed new hospital was subsequently visited with the Board and a committe of the council, and the old building not being deemed satisfactory, the committee at once ordered the town architect to proceed with the plan of an isolation hospital which was completed in a few days.

Subsequent to my visit 17 cases occurred, but all in persons belonging to the families already infected. While this number might have been much lessened by prompt vaccination in those instances where cases had occurred in any house, yet the Local Board did as much under the circumstances as they could, and cannot be held accountable for the neglect of that part of the work having a more technical character.

The whole work of disinfection has now been carried out to the satisfaction of the medical health officer. The lesson has been a costly one to the municipality, but if by it Southwold and municipalities generally should learn that systematic vaccination year by year is the only safeguard (since it appears that early diagnosis and isolation of first cases cannot always be depended upon), then the lesson will not have been taught in vain.

P. H. BRYCE.

The following report of Dr. J. H. Howell, Medical Health Officer, appointed at the date indicated above, gives the chief details connected with the outbreak in Southwold :

To the Secretary of the Provincial Board of Health :

Dear Sir,—During the latter part of January the disease made its first appearance at Fingal. Two children, both members of one family, were the first cases affected. Members of the family had been previously living in Buffalo, and as smallpox was quite prevalent there at that time, they undoubtedly brought it with them in some way. It was pronounced chickenpox by the attending physician, and as both made good recoveries but little attention was paid to it. A couple of weeks later a woman living across the street, who had been in frequently to see the children, was stricken down with it and died in a few days. Shortly after another woman took it and also died. And a little later the father-in-law of the first woman contracted the disease and died.

Up to this time (the latter part of February) it had been pronounced malignant chicken-pox by the two local physicians, and no precautions whatever had been taken against the spread of the disease, which had now broken out in two or three fresh places. Public funerals had been held of those who had died, and a largely attended dance had been given about the middle of February at the house where the two children were recovering from the disease.

As matters were now looking serious a meeting of the Board of Health was called on February 21st, and three doctors from St. Thomas were asked to see the cases, and all agreed that it was undoubtedly smallpox of a severe type. The people were almost panic-stricken at the news. Fresh cases were breaking out in every direction, and as so many had been exposed to the disease it was not known where it would end. Active measures were at once taken by the Board to prevent any further spread. Public vaccination was commenced and all the infected houses and those who were known to have been exposed were at once quarantined. People were so badly frightened that it was next to impossible to secure attendance on the sick, and great difficulty was experienced in getting the necessary supplies from the neighboring town. The Board, notably the chairman and secretary, labored day and night to secure proper attendance, and to check the spread of the disease. Dr. McLay, of Aylmer, was engaged to attend the patients who were scattered over different parts of the township. There was no medical health officer, but on the advice of Dr, Bryce, who visited the scene on March 2rd, one was appointed. The epidemic was soon under control, and the last death occurred on March 12th, and a couple of weeks later the last case had been reported.

The disease broke out in thirteen houses in the municipality. Forty-three cases were reported. and of these twelve died, giving a death-rate of twenty-eight per cent. Of those who died none had ever been vaccinated, with possibly one exception. Eleven of those who had recovered had never been vaccinated, which gives a death-rate of fifty-two per cent. among the unvaccinated. The remaining twenty had either been vaccinated or inoculated, and all had the mild type of the disease. A noteworthy fact in connection with the epidemic is that after the Board of Health commenced their efforts to stamp out the disease, no cases developed except among those who had been previously exposed and their families. Thorough disinfection, vaccination, and efficient quarantine were the measures which cut short an epidemic which had a start of six weeks and had been allowed every chance to spread.

Quarantine was raised from the last house on the eighth day of May.

Yours truly,

J. H. HOWELL,
Medical Health Officer, Southwold Township.

Shedden, Sept. 21st, 1889.

REPORT OF THE COMMITTEE ON EPIDEMICS *RE* AN OUTBREAK OF DISEASE AT SANDFORD, NEAR UXBRIDGE, AMONGST HORSES.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—A few days ago the Department of Agriculture was informed that a sudden and terribly fatal outbreak of disease had occurred near Sandford, amongst the horses of Mr. Thos. Burnham, and that it was pronounced to be epizootic cerebro-spinal meningitis, by the veterinarians. I proceeded at the request of the Department to investigate the same. The following are the principal facts:

On Tuesday, 7th May, the first horse was noticed sick at 6 a. m., died at 12 a. m., aged 5 years.

2nd horse took sick in going to Mt. Albert, died Tuesday morning, 7 years.

3rd horse took sick, died 7 a. m., Wednesday, 4 years.

4th horse, yearling, sick Thursday, died Friday.

5th horse, sick on Saturday, 11 a. m.

The symptoms as described, left little doubt but that the cases were those of some septicaemic poison, the intensity of whose effects made themselves felt in the cerebral and spinal centres, as paralysis rapidly intervened, with in most cases marked comia, ending fatally. These horses had apparently been perfectly well on the preceding Monday, the 6th. There had been no similar cases in the neighborhood recently, and assuming the cause to be local, search was instituted. Rain water in three large cisterns is used for watering the animals. The one in the stable where the horses were was the oldest and was used for wetting the cut hay and meal in the horses' mangers. It had not been recently cleaned out, but was well made, lined with cement and covered with planks which were somewhat decayed and covered with fungoid growth. The stables were good, but the deeper part of the mangers had been blocked, but these were in fact loosened and the soakage from the food had caused some decay. The other cisterns were new, and had not probably been used for these horses.

The question arises, was the disease due to either of these sources, whereby by saprogenic products were introduced either into the food, or by emanations introduced into the air passages.

Regarding the nature of the disease, there can be little doubt but that its affinities are those belonging to an epizootic which, appearing in 1871 on this continent, caused great havoc amongst horses, and which prevailed in the provinces and states bordering on the great lakes to an epidemic degree amongst children. Whether again the disease so suddenly developed might be classed with those which like diphtheria are associated with decaying products, may well be considered. A constant symptom with these horses was an inability to swallow, and although they would nibble, they simply made a "cud" or mass in the mouth, which would be allowed to drop out. They were first dull, pulse was weak and rather slow, and the mucous membrane of the nose seemed pale. Complete isolation in different fields was ordered for the two remaining horses, one of which was sick and likely to die. I insisted on having the stables completely cleansed, especially the mangers, and to be kept vacant for several weeks and well aerated, and the cisterns to be emptied, lime-washed, and to be covered with metal or other substance than wood. Samples of water were taken from the wells, and, were facilities at hand, a biological study of those and the decomposing products in the mangers, would doubtless have been productive of good. Referring to past outbreaks, I find that an epidemic of it is reported in Jackson, Michigan, in 1881 in children, marked invariably by sore throat, also an intensely painful catarrhal inflammation of the schneiderian membrane, with offensive discharges. Some continued with complete cerebro-spinal paralysis, lasting at times 24 hours, some with convulsions. An early prevalence of diarrhœa, etc., June 16th, was associated with an exacerbation of cerebro-spinal meningitis. The subject deserves, however, a much more careful enquiry than has been possible.

Yours truly,

P. H. BRYCE,
Secretary.

REPORT ON METHODS OF SEWAGE DISPOSAL IN ENGLAND.

To the Members of the Provincial Board of Health :

GENTLEMEN.—In consequence of the protracted illness of a near relative whilst in England I was not able to attend to the trust reposed in me at the May meeting of our Board, viz., that of acting as their representative at the Congress of Hygiene assembled in Paris during the time of the National Exposition, as also of the meeting of the British Medical Association this year convened at Leeds, Yorkshire. For the acquisition of a knowledge of the procedures of the Congress at Paris, I put myself in communication with Monsieur Masson, the Secretary of the Bureau d' Assainissement, and by him was informed that on payment of the fee required from all delegates the daily agenda papers and the final report would be supplied to our Board. This information I transmitted to Dr. Bryce with a request that he would forward to the gentleman named, whose address in Paris I communicated the required amount, viz., twenty francs. Any imperfection in the complete records of the Paris convention will, I am well assured be supplied in the report that our friend Dr. Ranch, Secretary of the Illinois State Board of Health, will furnish at the approaching convention of the American Public Health Association this year, appointed to meet at Brooklyn, New York. For the papers, discussions and reports of the Leeds meeting, I wrote to a nephew a long resident and well known practitioner in that city, enclosing him my credentials, and requesting him to report to the chairman of the State medicine section the cause of my absence and to solicit for our Board any particulars of the session that might not appear in the *British Medical Journal*, or in the daily newspapers of the city. To this application I received a prompt answer from my nephew to the effect that he would forward to Dr. Bryce all the information required. In compliance with a request made in a letter received from our secretary early in July, I endeavored to obtain for our Board information as to cost of the necessary plant for the complete fitting up of a bacteriological laboratory, as also reports of the different modes of procedure adopted in the different cities and towns of England for the disposal and purification of sewage. For procuring this desired knowledge I visited Drs. Buchanan and Thorne Thorne, the President and Vice-President of the Local Government Board, Whitehall, and from the latter obtained a list of eight towns, viz., Acton, Hendon, Friern-Barnet, Oxford, Doncaster, Croydon, Reading and Cheswick, where it was represented to me that valuable information could be obtained. To the medical health officers of all these towns I addressed letters, but up to the time of leaving England for Canada, I was in receipt of answers with accompanying reports from only three, viz., Friern-Barnet, Oxford and Reading, the same now submitted.

To commence with the information sought for *re* bacteriological laboratory. In the latter end of July, I received an invitation from Dr. Tett, one of the physicians of Guy's hospital, to lunch with him and a kind intimation that he would take me to the hospital and introduce me to Dr. Washburn, the professor of bacteriology at Guy's, who would furnish me with the required information regarding the cost of fitting up a laboratory. By this gentleman I was most courteously received, taken through the various rooms in use for his laboratory and also shewn a copy of the bill of cost of furnishing, less than thirty pounds, also a kind promise that whenever our Board resolved on fitting up one he would obtain for us the same appliances that he found to be all that was necessary, from the very best makers at the prices charged for Guy's hospital laboratory. A list of these charges I enclosed to Dr. Bryce a few days after their receipt. From the three towns above mentioned, from the respective medical health officers I received replies from, I selected Friern-Barnet as the most accessible. This town has at present a population only of eight thousand, but will as a suburb of London, in all probability, rapidly increase. Dr. Hugh Stott, the energetic medical health officer informed me that he had in the past, frequently occasion to report on as being in a condition dangerous to public health, and that the same must continue if the then existing method of disposing of the sewage by cesspools was depended on. Until within a few years there were no sewers and all temporary measures had failed on account of unsuitable ground for intermittent filtration. On the 8th of August I drove over to Dr. Stott's health office by appointment some seven miles distant from my residence, and was by this gentleman most courteously

received, and for more than an hour and a half was occupied in a survey of the works, Dr. Stott minutely explaining to me the *modus operandi*. I regret now that I did not take notes at the time, as from recollection only some of the details may be omitted. I may commence by stating that the cost of the works and the sewerage of the town amounted to forty thousand pounds, the annual cost of working three hundred pounds, and taxes levied seven shillings in the pound. The sewage on reaching the works passed from the outfall of main sewer into a large well in which is slowly revolving a large and broad wheel, the entire outside of which is covered with a fine wire netting which intercepts the coarse matter likely to choke or injure the pumps. The sewage thus strained is caught in cups placed on opposite side of wheel and from these with every turn the sewage passes through a culvert to a pump well under the main building, then raised by centrifugal pumps to the surface where it receives a large charge of lime and alum, is thence by the action of the pumps discharged into a meter chamber where the sewage is measured and quantity registered. On leaving the meter the sewage flows along open conduits exposed to oxidation by atmosphere to successive settling beds which have at the bottom a thick layer of charcoal precipitating the solids as it flows ; passing from one filtering bed to another and from the last the clear effluent passes into a narrow stream which also receives the effluent from Colney Hatch lunatic asylum, the principle of separation there adopted being intermittent irrigation of the grounds attached to the institution. This effluent from the Friern-Barnet works we tested with Nessler's solution which almost immediately produced an orange colour, proving that it was not entirely free from ammonia. This, as far as I remember, Dr. Stott accounted for by the fact of continued heavy rains having interfered with the usual frequent removal of the sludge from the bottom of settling beds. This sludge I may state has but little market value even in England. I now pass on to a more recent system of disposing of sewage, namely by electrolysis :

Whilst on a visit to my brother-in-law, Dr. Hutchens Williams, of Lee, County of Kent, I learnt that Mr. W. Webster, F.C.S.. had for a long time been carrying out long and exhaustive series of experiment at Crossness for the purification of sewage by electrolysis, and that he was a resident of Lee, I therefore, on the 25th of July, addressed a letter to him in which I stated that I had been requested by our Provincial Board of Health to give as much attention to the question of the disposal and purification of sewage as my time would permit during my visit to England, and that as I had been informed that the opinions of the press generally hae been most favourable of the electrical method for the purification of sewage at the main drainage outfall at Crossness, I would take it as a favour if he would kindly furnish me with a report. Two days after I received from him the following notes from which I extract the chief points :

The dynamo is an Edison-Hopkinson, capable of developing an energy of 43 h.p. From the dynamo the laeds run through resistance frames by means of which the amount of current can be regulated without varying the speed of the engine. These are then connected with the iron electrodes in both the precipitating tanks and the shoots. The precipitating tanks are used for taking experimental measurements so as to discover the best mode of arranging the electrodes, hereinafter called plates, made of cast-iron, run direct from blast furnaces. The shoot is fitted with wrought-iron plates, more convenient for experimental work as they are thinner and weigh less than if made of cast iron. The shoot is of wood, but in any permanent works it would be built of concrete, bricks or iron, and the bottom would be lined with asphalt or other suitable material. The sewage is discharged into the shoot from the pump connected with the main sewer. The shoot is fitted with plates as shown in the accompanying drawing. In travelling along the shoot every particle of the sewage comes in contact with the plates, and finally the whole is received into one or other of the settling tanks. The plates in this shoot are divided into twelve sections. All the plates in each section are connected in parallel, and the sections can be connected either in parallel or in series as may be most convenient.

I find it best to run them arranged as six sections in series, as owing to the low tension of the dynamo it is inconvenient to split them up into a greater number The dynamo should be near the centre of the shoot, and practice has proved that it must be so constructed that as many sets of plates as possible may be arranged in series, but the space at my command in these works does not admit of the most effective arrangement being adopted. My experiments prove that with 27 h.p. it is possible to treat one million gallons of sewage in twenty-four hours. These figures relate to average London sewage. As to cost of engine power, the newest type of engines suitable for driving dynamos may be taken to consume two pounds of coal per h.p., hour, and according to the price of the coal will be the working cost. The experiments carried out with reference to the amount of iron consumed by this process tend to prove that the consumption in continuous working should not be more than two grains per gallon. Here again, the cost depends entirely upon the position of the works, or more properly speaking, the district in which the works are situated. The plates of pig-iron, are one inch thick and if used in sufficient numbers would last for many years when once fixed. For instance, I will take a town with a flow of ten million gallons of sewage

per day, corresponding to a population of thirty thousand, at thirty gallons per head. To treat this amount of sewage the consumption of iron should not exceed four hundred and sixty-four tons per annum. On calculating the amount of mechanical power required per head of the population, I find it represents 1-1,225 of a h.p. or 8 h.p. per 1,000.

It will be seen that the above plant is practically in lieu of the mixing tanks, machinery, and chemicals employed in the chemical process for the treatment of sewage, and if such electrical plant is designed to meet the peculiar requirements of any particular district it must, in my opinion, cost less, and have a greater efficiency than any other process known, for not only does this electrical methed precipitate the matters in suspension, but it also removes organic matter in solution and forms a precipitating and disinfecting process in one operation. The cause of any successful precipitation of suspended matter in sewage is entirely due to the formation of floculent particles by means of chemical action. In the ordinary processes used this is obtained by the introduction of chemicals in a liquid form, and a large amount per gallon of sewage must be used to produce the necessary floculency. Electrolysis with oxydised plates produces this effect, with a consumption of material ranging from one grain per gallon, and the stronger the sewage the less the power required to produce the effect. The action that takes place manufactures the necessary precipitating agent in the sewage, whereas, precipitation with solutions of chemicals means a consumption of several grains per gallon of the sewage, if the action is intended to cause an adequate deposition of matters in suspension, and the resulting effluent requires further treatment with some oxidizing agent to remove the organic matter in solution. With my electrolytical process, at the same time that the precipitation of the suspended matter is taking place, the organic matter in solution is being oxidised by means of free nascent chlorine and oxygen given off at the positive plate. I may here mention, gentlemen, that in a letter I received from Mr. Webster at the same time as the above notes, this gentleman mentioned that the increased prices of coal and iron since the notes were issued would have to be considered. I now proceed to the very important endorsation of the system of Mr. Webster's that is to be found in the *London Times*, of the 1st of April, of the present year; in the *Engineer*, of the 29th of March, 1889; in *Engineering* of same date; in *The Electrician*, same date; in *Electrical Engineer* same date; in *Iron* same date; in *Industries* same date; in *Pall Mall Gazette* same date; in journal of gas lighting, water supply and sundry improvements, April 2nd, 1889; in *Standard*, 7th January, 1888. The articles in the above quoted journals I now submit *in extenso* to the members of the Board, but as it is probable that our Toronto newspapers could hardly spare the space requisite for the full report, I have thought it better to make such a condensation as would be suitable for the room in their columns. *Times*, 1st April, 1889: "Mr. Webster's process is intended to take the place of the purification of sewage by chemicals involving three processes, precipitation oxidation, and disinfection attended with the disadvantage, that if two many chemicals are used fermentation in the river may take place. The principle of the electrolytic system is that the compounds always present in sewage are split up into their constituent parts by the electric current passed through iron electrodes. At the positive plate chlorine and oxygen are set free and combine with the water and the iron plate to form acids which add powerfully upon the organic matter. A floculent precipitate of the impurities in suspension and in solution is formed, which after being first carried to the surface by the hydrogen generated, gradually settles to the bottom leaving a perfectly innocuous effluent. The effluent can, indeed, if sufficient electric power be used, be converted into an absolute disinfectant. The plant set up by Mr. Webster, at his own expense, for the purpose of experiment, consists of an engine of 20 h.p. and dynamo capable of developing 43 h.p., together with a wooden shoot fitted with iron electrodes. The sewage is pumped by the engine (which also drives the dynamo) into the shoot, and in travelling along it (shoot) every particle of the sewage is brought into direct contact with the plates or electrodes. The fluid passes from the shoot to the tanks, where the precipitate of suspended matter or sludge, as it is termed, settles at the bottom in about two hours, the effluent being afterwards drained off. The electrodes are made of cast iron and those in the shoot are divided into twelve sections, which can be connected either in series or in parallel. When once the necessary plant which can be adapted to any existing tanks, has been set up, the only outlay involved by the process beyond the ordinary working expenses, is in the renewal of the positive electrodes, for these are acted upon by the acids formed. It is calculated that to treat a flow of ten million gallons of sewage a day the consumption of iron should not exceed four hundred and seventy tons per annum, while the mechanical power required would be 8 h.p. per three hundred thousand gallons. These calculations based on London sewage, which is often diluted with rain-water. But where the sewage is tronger, the power employed need not be so great, because the chlorides which form the precipitating agency would be present in greater proportion to the volume. It is estimated that the working cost of the electrolytic process when aplied to a large volume of sewage, would be about thirteen shillings per million gallons and that the whole sewage of London might be treated for about thirty-six thousand pounds a year. Taking into account depreciation of plant, interest on capital, etc., the amount would probably be within fifty thousand pounds.

Description of the electrical method of disposing of sewage by Mr. Wm. Webster, in the *Engineer*, much the same as given in *London Times*, estimated in parts per 100,000 the suspended matter is reduced from 33.35 to 1.56; nitrogen as free ammonia is reduced from 4.34 to 3.22 and albuminoid matter from 0.5 to 0.2; chlorine as chlorides becomes 18 62 instead of 21.64, and the oxygen required to oxidise the organic matter becomes 0.52 instead of 1.24. A sample of raw sewage very turbid and opalescent, and with a bad odour, yielded a clear effluent without odour. The sewage contained 14.52 parts of suspended matter, 5.95 being mineral and 87 organic. In the effluent these quantities become respectively 1.48, 1.05 and 0.43; the free ammonia declined from 3.57 to 2.9, the albuminoid matter from 0.6 to 0.28 and the chlorine as chlorides from 14.61 to 13.39. The oxygen required to oxidise the organic matter was 4.03 in respect to the sewage compared with 1.34 for the effluent. Dr. Thudicum, who was present, said he was induced from what he had seen to look upon the process with the utmost hope; if Mr. Webster succeeded as he trusted he would, the process would open up a new era in the history of the sewage question."

Engineering, at the conclusion of a long and favourable notice of Mr. Webster's electrolytic system says: "There is a charming simplicity about Mr. Webster's process. He manufactures his chemicals to a great extent out of the sewage itself, and he uses them in the nascent state when it is well known they are most powerful. Instead of adding 5, 10, 12 or 15 grains per gallon of solid matter, as is now done, he only adds two, and he not only precipitates the matter in suspension, but he also removes some of the organic matter in solution. This latter is an important matter, as it defers the second decomposition so long that the effluent may be carried down to the sea, or oxidised by natural influences, before it can occur.

The extent to which the purification can be carried is merely a matter of time, and in hot weather when the quantity of sewage is reduced and is consequently fouler, it can be allowed to remain for a longer period in the electrolytic bath."

Electrician, of 29th of March, 1889, says :

"On Wednesday last, when the representatives of the technical journals visited the outfall works of the Metropolitan Sewage Works, at Crossness, where Mr. Webster has had an experimental plant in operation for nine months, we first witnessed some laboratory experiments on a small scale designed to show the principle of the method. The color, density and constitution of the London sewage varies from hour to hour. The first sample to be dealt with was of a light yellow colour looking something like weak tea with a little milk, so far as could be seen, containing very little solid matter in mechanical suspension. This when poured into a test jar, had a current passed through it between a pair of iron electrodes with about six volts, E. M. F. An extremely rapid effect was produced in less than two minutes, the jar was seen to be filled with a flocculent precipitate which was gradually carried upwards by bubbles of liberated hydrogen. After three minutes the electrodes were withdrawn and precipitate left to collect at the top. In actual practice, after the effluent has passed into the settling tank, the precipitate, in the course of two hours, loses the whole of the entangled hydrogen and sinks to the bottom of the tank. The sludge thus formed is similar to that produced by chemical process now in vogue, except that the electrical method possesses the obvious advantage that the total quantity of the material has not been increased by the addition of chemicals. The exact nature of the chemical action upon the organic matters in solution is not wholly understood. Mr. Webster is inclined to think that the first step in the process consists in the formation of a hypochlorite of iron. All sewage is rich in chlorides and this fact is of advantage in increasing the electrical conductivity of the fluid. Mr Webster's proposals for the electrolytic treatment of sewage upon a wholesale scale were of so novel a character that a good deal of scepticism was at first evinced. On Wednesday last, however, we spent some hours at Crossness where we witnessed experiments, both on a laboratory scale and also in the works erected by Mr. Webster which are capable of dealing with half a million of gallons of sewage per day. In comparing the cost of any chemical process at present in use, it is desirable to ascertain whether this chemical process at present in use is effectual. It is certain that in many cases owing to the small quantity of chemicals employed, the treatment is very nearly ineffective. We are therefore inclined to take a very hopeful view of the future of this new and most important branch of electro technics."

From the *Electrical Engineer* :

"To what base uses may we return ! ! is the *Electrical Engineer* tempted to exclaim when he hears of the application of force he deals into, not now light and beauty and swift travel, but to the treatment of sewage ? Yes, and to what beneficent and healthy uses, he may well add in consonance with the sanitary engineer, as it is proved to him that the same current that would electroplate the teapots and spoons in Sheffield, alters with its magic touch the most vile and deadly matter now poured by millions of gallons daily into our bays and rivers, into a pure liquid, and not only into a pure water, but into an absolute disinfectant. Such is indeed the fact, and the science of health, the coming science of the future, will have at its hand the aid of electricity to settle the enormous difficulty it has hitherto had to contend with in the disposal of sewage of its large cities and towns, and an engine and a dynamo will become the modern Hercules which will purge the .Egean stables of our metropolis. Mr. Webster has been working in connection with sewage and water treatment most of his life. Latterly he conceived the idea that the precipitation might be brought about by electrolysis and made some experiments with carbon plates, but it was not until about three years ago that the idea of using iron plates as electrodes, which has made the process a complete success occurred to him. The average of twenty analyses taken at Crossness during 1888-89, show that the raw sewage very turbid and opalescent, containing 33.35 parts of suspended matter in 100,000, the effluent was clear containing 1.56 parts per 100,000."

Iron, 29th March, 1889 :

A satisfactory solution of the question of the precipitation of organic matter in sewage and the delivery of the effluent in an innocuous condition seems to have been found in the system of sewage treatment, by electrolysis, invented by Mr. William Webster. By this system it is claimed that the entire sewage of London can be precipitated at an annual cost of three hundred and sixty-one thousand pounds. The system of Mr. Webster compares more favourably than those obtained by chemical treatment.

Similar favourable notices have appeared in *Pall Mall Gazette*, *Industries*, *Journal of Gas Lighting* and *Standard* newspaper.

All of which is respectfully submitted,

C. W. COVERNTON.

REPORT OF COMMITTEE ON SEWAGE AND WATER-SUPPLY, ON SEWAGE FARM AT LONDON ASYLUM.

To the Chairman and Members of the Provincial Board of Health :

GENTLEMEN,—Your committee on sewearge and water-supply was, last autumn, directed to consider certain plans for a system of irrigation known as the Intermittent Downward Filtration System ; which system the forwarders of the plans intended to apply to the disposal of the sewage of the Asylum for the Insane, near London.

Your committee examined these plans and having been led to a favourable conclusion regarding them, reported to the Board accordingly, and its report was adopted by the Board.

Your committee has now much pleasure in reporting further, that the works there proposed for construction have been completed, and that they were formally opened on the 5th day of July in the presence of Government Inspector O'Reilly, Engineer Kivas Tully, Colonel Waring the Engineer of the works, Hon. Mr. Drury, Minister of Agriculture, Mayor Taylor of London, and large deputations from the City Council, the London Board of Trade, the Hospital Trust Board, the Board of Health, and of the citizens of the town and coanty.

Your committee was also present having been invited with the other members of the Provincial Board of Health, by the courtesy of Inspector O'Reilly, and it begs to report :

We had already become familiarized with the plans. We now listened to the demonstration of these, in their several details, by Colonel Waring, and having further looked into every part of them, in actual operation, we were persuaded that the system of "Intermittent Downward Filtration" presents a long desired solution of a hitherto formidable difficulty in the sewage problem. It seems to offer the means for thorough disposal of sewage, so that the material is not only innocuous and inoffensive, but is made to be most useful as a fertilizer of the soil.

For the knowledge of the process here employed, we seem to be indebted to the English and French. When apprehended, it is seen to be a process of great simplicity. Contemplating it, one is reminded of a forecast of the late Professor Sir James Simpson, regarding the successful treatment of certain incurable diseases. The knowledge of the modes of cure, the professor said, would be found to lie just beneath the surface. It has been so with that of the safe and useful disposal of the life-destroying sewage. We have been within a hand's breadth of this knowledge for the past fifty or sixty years. The mode by which the end desired is accomplished is by the application in a new direction of the principles of thorough draining.

Some of us are old enough to remember when the practice of thorough draining the fields first came into use, and the *rationale* given to us of its results. We were told, that by thorough underdraining, not only was the superfluous matter carried away through the soil, but further, that wherever water could pass air would follow, and that air was not only itself useful, but was moreover a great decomposer and disintegrator of the soil. We knew a good deal in those days about oxygen, and its affinity for so many substances, but we did not believe that its power of affinity was sufficient to change the composition of town sewage in a short time, and so the utilization of sewage, although it occurred to many, was passed by, by general consent, as being not a very clear or very safe proposal. It was long before we became acquainted with bacteria, and only lately have we known how beneficent many of these are, and potent, because of their abundance in certain soils, to transform, in such soils, a noxious and disagreeable material, into one which is most useful. With this knowledge on our part, without doubt a much more extended field of usefulness will be opened up for these little organisms.

The sewerage of the London Asylum may be described as follows :

The sewage is conveyed from the various buildings of the institution by means of close-jointed vitrified pipes which are kept abundantly flushed, to an underground brick tank, seventy feet in length and about ten feet in breadth, which is capable of holding a much greater quantity of water than the daily supply of the asylum. The bottom of this tank is fifteen feet below the surface. The contents of the underground pipes

leading to the tank have, owing to its depth, a fall into it of some six feet. They fall into a small chamber at one end of the tank, partitioned off from the main body of it, at one end, by an iron screen or grating, the meshes of which allow no solid particles of any size to pass through them into the main body of the tank. By the fall from the pipes into the tank, the solid matters in the sewage are broken up, and are thus permitted to pass through the meshes of the screen, into the main body of the tank along with the fluid matter. At the opposite end of the tank to that where the sewage enters, there is a sump into which the sewage gravitates and from which it is drawn through an iron pipe by the action of a centrifugal pump driven by a 25-horse power engine. The suction is so arranged that the tank can be pumped dry every day. Further, the tank is well ventilated having man-holes to the surface and pipes which run into the chimney of the pump-house.

Arriving at the pump the matter from the tank is farther churned and thoroughly broken up, and is forced through a well caulked iron pipe to the disposal field or sewage farm, about a quarter of a mile away. At the disposal field the sewage, now quite fluid, is received into a brick well, from which it overflows into an open channel of earthenware pipe. The channel runs along the end of the tract of land which has been prepared for the reception of the sewage, the soil and the situation of the tract having been found adapted to that end.

At right angles to this open channel there run, along the prepared land, open ditches eighteen inches deep two feet wide at the bottom and at the top these sides gradually merging into the surface of the ridges between them, those ridges are about 10 feet wide. These are connected with the open channel at the end of the field, but the connection can be cut off at will, by gates. The sewage of one day is run into three or four of these ditches, next day into as many more, and that of the third day into the remainder. By the fourth day the land intersected by the first is ready to receive and to decompose its proportion again.

In being prepared for receiving in this manner, and decomposing the sewage safely and inoffensively, the land has been carefully levelled and underdrained. In its way from the superficial ditches to the deep open tile drains laying equidistant between them the sewage is exposed to the action of the bacteria and air in the soil of the field, and finally escapes into the tile drains, from which it finally passes as harmless water, as is usual in drained fields.

The position of the London asylum is such that it cannot avail itself of gravitation to run off its sewage. Hence the necessity for steam power to elevate the material to the field of distribution. No doubt this is to be counted as an additional expense in the draining of this place; but the expense is not by any means to be regarded as wasted. As far as your committee could judge, the more complete comminution of the more solid constituents of the sewage by the action of the pump, is no small advantage, for the discharge from the distributing well is here perfectly fluid, whitish, like soapy water, and free from offence to sight or smell, and, your committee would suppose, much more ready to yield to the agencies in the soil which are ready to deal with it.

It may not be within the limit of the duty of your committee to deal with the question of cost, yet it may be said that the safe disposal of sewage is a matter of ever-increasing moment, and that with regard to it we have but a choice of evils. On the one hand costliness in money, on the other costliness in life and health, and also of money. Which of the evils shall our cities, towns and villages choose to meet?

The deadly results of sewage pollution need hardly in this day be insisted on: too many are familiar with the diseases which arise from this cause. They have seen their children and their youth, especially their young women, die under the sufferings of diphtheria, and their friends from early life to the verge of old age sink under typhoid fever. Those are not the only diseases which are consequent on the presence of filth. They are mentioned as examples of suffering thus brought about. If much money is needed to remove the material which is a fruitful source of those and other fatal ailments, and to reduce it not merely to a state of harmlessness, but to a condition of usefulness, it is surely money well spent. Further, if there are fanciful or questionable ways of disposing of corporation funds, such ways should not be permitted to interfere

with the expenditure necessary for saving from death the multitudes who are every year being destroyed in our families by breathing and drinking the products of the fermentations of the excrement of man and beast. May we venture to recommend that all parties unite to arrange, by legal enactments that municipalities shall provide for the quick removal from their neighbourhood of all material, whether scattered on their streets, lying in heaps in secluded places, or issuing from their drains, and for its immediate and complete decomposition. Should we not also use our utmost influence to re-enforce the existing law against sewage being run into streams and water courses?

J. D. MACDONALD.
H. M. MACKAY.

October 4th.

As supplementary to the foregoing report your committee would say that at the meeting of the association of the executive officers of health at Brockville in August, the association, of which your committee forms a part, examined the system of drainage being at the time put in construction in that town. Brockville is putting in operation the "Separate System" of drainage, using the old drains of the town to carry off the rain-fall only, and your committee had the opportunity of looking into the system in practice there.

REPORT ON THE POROUS CARBON SYSTEM FOR PRECIPITATION OF SEWAGE AT ONTARIO AGRICULTURAL COLLEGE.

To the Chairman and Members of the Provincial Board of Health:

Mr. Chairman,—On the 7th of October last, your Committee on Drainage and Water Supply, by invitation from the Hon. Charles Drury, Minister of Agriculture, proceeded to Guelph for the purpose of being present at, and of inspecting the drainage of the Ontario Agricultural College. Those works were to be, that day, formally opened. They had been under construction by Mr. Straith Miller, under the supervision of the Department of Public Works, and the nature of their operations was said to be such, that, at little expense, the sewage was so dealt with by decomposition and precipitation, that the effluent fluid, after these processes were undergone, consisted of water pure enough for any purpose. The substance employed for these purposes is called "porous carbon," and consists of a lignite, enriched with sulphates of iron and of alumina. It is obtained by quarrying or mining in Devonshire, in England, and is meanwhile so cheap that we were assured by Mr. Miller that a sufficiency for all the purposes of the college for a year could be laid down there for twenty-five dollars. Your committee has since been informed that the amount here stated will not be sufficient now.

There were present on the occasion: The Hon. Minister of Agriculture; the Hon. the Provincial Treasurer; a large number of official and prominent gentlemen from the counties of Wellington and Waterloo, from the city of Guelph, including gentlemen of the press from that city, as also the Superintendent of the Asylum for the Blind at Brantford, and the Superintendent of the Asylum for the Deaf and Dumb, near Belleville, and two Inspectors of public institutions. This Board was represented by the Chairman and Secretary, as well as by your committee.

Your committee was kindly and courteously shown over the works by Mr. Miller, and had every point clearly explained to them.

Mr. Miller first led down a gentle slope, behind the college for a hundred yards or so, and stopped at a covered man-hole. Removing the cover, he showed us a small vault 9 or 10 feet long and 5 or 6 feet broad. In the bottom of this vault lay a double vessel, oval in shape, not unlike an ordinary kitchen boiler with another within it, having a space of a few inches between the sides of the outer and inner vessel. Into this space,

at what was the higher end of the oval, the sewage from the college was conducted by an underground pipe, and flowed through it to the other and lower end of the oval, in its course through getting mixed with the "porous carbon." This substance had been placed in the form of a coarse powder in the inner vessel, the sides of which were perforated near the bottom. Into this inner oval box there fell, from a height of several feet, a stream of water from a pipe placed on the side of the vault. The fall of the water was high enough to churn the contents of the box and to dissolve or suspend much of the porous carbon, so that it could escape with the water through perforations in the sides of the vessel, and so, in the interspace between the vessels, become mixed with the sewage which was to be purified. Leaving the vault by a pipe at its lower end, the mixed sewage and porous carbon were conveyed underground to a small stone building not many yards down the slope. This building is the "tank house." In it are three tanks, two larger, placed side by side and occupying two-thirds or more of the building, and one smaller tank at a lower level, and occupying a portion of the remaining space. The two former are the "settling tanks," which are used alternately, one being filled with the mixed sewage and porous carbon, while the mixed material with which the other has been filled is settling and decomposing by chemical combination. As soon as the settlement is complete the fluid is run off clear into the third tank.

For the satisfaction of the curious and the sceptical a glass tumbler had been kept here by Mr. Miller, and your committee was invited to test the purity and potability of the waters, called by Mr. Miller the "effluent." The fluid seemed sufficiently clear, clearer indeed than the glass in which it was held up for inspection, but your committee did not consider that the parties present were sufficiently high in office to make the test proposed of any value, and so they were not forward to make it.

It was stated that the solid matters precipitated in the settling tank formed a very valuable manure, which on being dried and powdered might best be used by being dibbled in with the plant seed.

The effluent is conducted from the tank-house by a tile to a water-course at the bottom of the incline, thence passing into the river Speed some half-mile distant. Inasmuch as the effluent, though deprived of the coarse portions of the sewage, retains a certain amount of soluble organic compounds, notably, albumenoid ammonia, it is very desirable as pointed out at the time by a member of your committee that it be further purified by leading it along the hillside in several radiating drains, made of field tile, thus allowing it to soak away into the soil, there leaving its soluble organic constituents to benefit crops growing there, and preventing the possibility of the accusation of any nuisance being caused by the decomposition in the effluent waters afterwards as they pass along the watercourse.

Before concluding this report, the undersigned are called upon to refer with deep regret to the death of their coadjutor on this committee, Dr. Hugh D. McKay, as well as to that of our lamented friend and associate on this Board, Dr. Horace P. Yeomans. Both were young men, in the prime of their lives and usefulness. Both were continually striving after increased professional excellence, and they were marked by a singular gentleness and frankness of demeanor which became them as kind physicians and as christian gentlemen.

Respectfully submitted,

J. D. MACDONALD,
P. H. BRYCE.

REPORT OF THE COMMITTEE ON POISONS.

To the Chairman and Members of the Provincial Board of Health :

GENTLEMEN,—Although carbolic acid is in common use as a disinfectant, its exceedingly poisonous nature when swallowed does not appear to be generally known or understood. In fact many persons, otherwise well-informed, are not aware that it is a poison. Owing to the fact that it is much recommended for disinfectant purposes, by sanitary authority, many persons appear to think that it is incapable of causing harm. A word of warning in this respect will therefore not be amiss. This preparation is frequently prescribed by physicians in obstetric practice, more particularly in cases where some rent or tear in the genitals has occurred during the process of parturition. Inasmuch as the acetate of lead or permanganate of potash dissolved in water is generally sufficient for the local treatment of such cases, it would be well to restrict the use of carbolic acid, and when it is ordered, to inform the invalid and her attendant of its nature.

An accident occurred recently in the practice of a member of your committee, illustrating how dangerous carbolic acid may become when carelessly handled. Shortly after breakfast, a boy of four years of age drank about a tablespoonful of a liquid which was lying in a glass, over about half an ounce of carbolic acid in crystal. He found the glass on a mantel-piece, where it had been put by his grandmother, who was using its contents for a sore wrist. This rudely prepared lotion had been given the old lady by some sympathising stableman visiting next door, who was doubtless in the habit of employing such preparations for their wounded horses. Had she purchased it from a chemist, the phial containing the preparation would have been labelled poison. Not thinking that this liberally donated medicine was a poison, the old lady left it in the glass, and her grandson taking it for ice-water drank it. The child's mother though alarmed at his evident distress, did not discover that carbolic acid was a poison until she had inquired of a neighboring druggist. Vomiting of the contents of the stomach began soon, the vomited articles having a strong odor of carbolic acid. When seen about twenty minutes after the accident, his lips, tongue and the mucous lining of the mouth were stained of a grayish white color, his eyes were sunken in his head and had a dazed expression, his extremities were cold, and his hand was moved about so that the pulse could not be counted. Lime-water alone and combined in equal parts with milk was freely given; hot blankets were wrapped about his naked body. Next day olive oil in teaspoonful doses was ordered to be given three times a day. Since then (the accident occurred on April 27th) his patient has improved, though it is quite possible the end is not yet, and that he may suffer in after years from some disorder due to the corrosive action of carbolic acid.

Recently in one of the London hospitals, a night-watchman was brought in who had swallowed 3 oz. of common brown carbolic acid, such as is used for drains, thinking that it was cold tea. He presented all the well-known symptoms of carbolic acid poisoning, and fell rapidly into a state of coma. The stomach-pump was used and the stomach washed out with water; artificial respiration and hypodermic injections of ether were employed, but without avail as the patient died in forty-five minutes after taking the poison.

To what are the toxic effects of carbolic acid due? To two principal causes. 1st: It coagulates albumen, it is corrosive and may cause death by severe injury to the mucous membrane of the mouth, gullet and stomach. It has even been reported to cause death as the result of external application; 2nd: It is inebriant and in its chemical deportment stands, like benzine, very near the alcohols. What is a fatal dose of carbolic acid? Taylor says: "A woman died from swallowing a wineglassful of carbolic acid, probably a weak aqueous solution. She did not speak after taking it and died in about half an hour. In 1867 a child under two years was brought into Guy's hospital under the effects of this poison. It had taken two teaspoonfuls of the ordinary brown liquid carbolic acid. This proved fatal in twelve hours. In another case a tablespoonful proved fatal to a young man. It has caused death rapidly. In a case which occurred to Mr. Jeffreys, an adult died in fifty minutes after taking from one to two tablespoonfuls of the liquid acid."

What is the treatment? No antidote has yet been discovered. The stomach should be evacuated by copious albumenous drinks, such as milk and white of egg, or by the stomach pump, injecting and withdrawing such liquids. Oil is also of use by rendering the action of the acid less concentrated and by delaying its absorption. The tendency to collapse should be combatted by drugs, heat and by an emetic containing some alcoholic liquid. Should this stage be got over safely, a diet of lime-water with milk should be used for several days. Occasional doses of olive oil should also be given.

While writing out these hints on the treatment of cases of poisoning by carbolic acid, we wish more particularly to draw public attention to the fact that this preparation taken into the stomach is a deadly poison, and to express the hope that all persons using it will take precautions so that it may not cause serious accidents or death.

All of which is respectfully submitted.

J. J. CASSIDY.
FRANCIS RAE.

REPORT OF A COMMITTEE APPOINTED TO INVESTIGATE A NUISANCE IN YORK TOWNSHIP, ARISING FROM A FAT-RENDERING AND HOG-FEEDING ESTABLISHMENT.

MR. CHAIRMAN AND GENTLEMEN:—At the last quarterly meeting of the Board, your Committee were requested to examine the premises of Messrs. Glanville & Muffit, York Township, complaints having been made that the said premises were in such a filthy condition as to cause a nuisance and be a danger to the public health.

We therefore visited the premises in question, and subsequently sent the following letter to Messrs. Glanville & Muffit and the York Township Local Board, conveying thereby our views as to the means to be adopted to remedy the nuisance:

PROVINCIAL BOARD OF HEALTH FOR ONTARIO,
TORONTO, Oct. 17th, 1889.

Messrs. Glanville & Muffitt, Seaton Village, Toronto, Ont.

SIRS,—In consequence of a complaint made to the Provincial Board of Health of Ontario, of a nuisance said to exist on your premises on the Vaughan Road, York Township, we were appointed a Committee to investigate the same, action being taken under sec. 29 of the Public Health Act, as also in compliance with a request made by the Local Board under sec. 64 of the same Act.

We proceeded to your premises on October 9th inst., and found evidence enough to show that there were reasons for the complaint, as will appear in the following particulars:

(1) The floor is so constructed that it cannot be readily kept free from accumulations of animal matter. In those parts of the building devoted to the storing, selecting and boiling of the materials, it was covered with putrescent animal matter, exhaling the most nauseating odor, while at the further end of the building, the insufficient use of absorbent bedding in the pig pens leaves the floor in a more or less filthy and bad-smelling condition from the presence of manure.

(2) The area at the rear of the building on the side of the hill is covered with an unnecessarily large accumulation of manure and slops taken from the floor of the building. Exposed as they are to the air, they give off the excessively disagreeable odors associated with pig manure, made all the worse by the rains which aid in keeping up the putrefaction and further spread it over an increasing area of ground below. We have learned that with continued rains the washings from this accumulation pollute the creek running through the ravine.

(3) In the wide space to the west of the building, where the pigs run, the whole ground, muddy from previous rains, was covered with pig manure, while tramped into the mud or lying on the ground were portions of entrails which had been thrown to the pigs, and, putrefying, gave off the nauseating odors peculiar to all dead and decomposing flesh.

(4) Large quantities of manure brought from the slaughter-house, and containing blood, with the other accumulations of the pens, were exposed to the weather at another place on the hill-side.

(5) In the pen to the north of the ravine, owing to the large number of pigs running in the uncovered enclosed space, the ground had become polluted with their droppings, which, decomposing, increased the already polluted atmosphere about the premises.

We are aware that a permit to carry on your business has been granted conditionally by the Council of the Township, but would further say that it may be rescinded at any time, and the penalties for continuance without such license are so heavy as to make it most desirable that you use every endeavor to comply with the spirit under which such permit has been granted. Should such precautions be neglected, not only will the Township Council, under sec. 9 of the Public Health Act, be requested to cancel the permit, but this Board will also find it necessary to take action for the abatement of the nuisance under those sections of the Public Health Act giving the necessary power in such cases.

Having been requested by the Local Board of your township to examine your premises, we have advised them that you should take the following precautions so as to carry on your business with the view to preventing the creation of a nuisance :

1st. The slaughter-house refuse, when brought on the premises, should be stored in a tightly constructed compartment, kept cool during the hot weather by ice, until such time as it is to be boiled.

2nd. That the boiling or steaming should be conducted in steam-tight vats, or in pots with tight-fitting funnel tops, with tubes leading the vapors therefrom into the draught of the furnace. Boiling in open boxes or vats, as carried on at present, will not be permitted.

3rd. The floors of the boiling rooms and pens should be so constructed as to permit of rapid flushing. They should also be made clean, with abundance of water containing five per cent. of sulphuric acid, or one pound of sulphate of iron dissolved in ten gallons of water ; or by treating the floors freely with abundance of gypsum, or sawdust, or other efficient absorbent.

4th. The manure now left exposed on the hill-side to the north of the building must, with the other manure from whatever source, be properly stored under cover, to prevent putrefaction as much as possible ; while over each successive accumulation weak solutions of sulphuric acid or sulphate of iron may be thrown ; or, better, sufficient gypsum or sawdust may be added to absorb the odors. In this way not only will a nuisance from this source be prevented, but the ammonia and other products of decomposition possessing the greatest manurial value will be preserved.

5th. The pigs must be kept in covered and properly floored pens, where the manure may properly be collected from day to day, and the floors kept dry and clean ; beddings of straw and shavings, with sufficient absorbents as gypsum and sawdust must also be generally applied.

6th. The washings from the various sources, as from the boiling rooms and pens, can be made to flow by a small 5-inch glazed tile-pipe to a tank on the hill-side, wherein the solids may be allowed to settle ; while an over-flow pipe, with its mouth beneath the surface will carry off a comparatively clean water. This can be allowed to flow a few feet by another glazed pipe to a second tank lower down, with a tumbling basin so arranged as to empty itself at intervals. From this latter tank a 5-inch field tile is to be laid to deliver into a diverging series of tiles, lessening in diameter as they branch, and laid two or three feet beneath the soil in the field below. Soakage into the soil from these pipes will thus take place. and when the ground becomes super-saturated, clean water will run into the creek below.

All these remedies are practical, and can easily be carried out at a comparatively small expense. The manure can be frequently carried on to the land and ploughed under. The small entrails must be either properly treated by boiling before feeding, or be buried with the manure.

Not only will such systematic treatment of a refuse, always difficult to deal with, make the business much more agreeable for those engaged in it, but it will also tend to the healthier condition of the pigs, as filthy food is no more good for them than for any other animals. A saving in this way will equally result. We prefer to aid rather than hamper any necessary or economic industry; but the welfare and comfort of the public, and particularly the preservation of the public health, demand that every reasonable precaution be used by those engaged in such industries as yours to carry them on without nuisance or detriment to the general good.

We have the honor to be,
Your obedient servants,

Signed. PETER H. BRYCE,
J. J. CASSIDY.

REPORT *RE* NUISANCE IN EAST ZORRA, FROM HOG-PENS IN CONNECTION WITH A CHEESE FACTORY.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—In compliance with a communication from Dr. Bryce, the Secretary, dated 21st November inst., *re* a pig nuisance complained of at the village of Hickson, near Woodstock, on the premises of Mr. John King, I proceeded on the 29th of November to inspect the premises, and to investigate the nature and extent of the nuisance, and gathered the following information:

Mr. King owns the east half of lot 21, East Zorra, bounded on the east by the 13th line, the south faces on side road, and on the west by the P. D. & L. H. Railway running on the blind line. On the south-west corner is situated a large cheese factory that handles every season the milk of from 700 to 900 cows, and the whey from all this milk has for the past ten years been consumed on this 100 acre farm. Mr. King handles each season an average of 300 to 500 hogs, the larger number being fed outside and allowed to roam in certain fields, while a considerable portion are confined and prepared for the market in pens. The pens, as shown by the accompanying rough sketch, are situated adjoining the barnyard, near the centre of the farm and distant 300 yards from the factory, and about 400 yards from the nearest residence to the east. Between the pens and the side road is the residence of Mr. King, and between the pens and the residence passes a small stream that goes dry in the summer. This stream passes within 30 feet of the pens, and running eastward crosses the 13th line, goes through the farm of the complainant, and about a quarter of a mile further on empties into a living stream.

On the day that I visited the premises the ground was covered with snow, and, besides, not being pig season, evidences of nuisance did not exist as would be present in the summer months. But from the situation of the pens contiguous to a barnyard, on a mucky soil, and but a short distance from the stream, with no adequate provision made for taking care of the droppings and excreta from such a large number of pigs fed on whey, but all or nearly all being allowed to find its way into the stream, the conditions are certainly suggestive of an unpleasant and unhealthy state of things which not only demand, but easily admit of improvement from a sanitary point of view. However, in view of the pens being situated at a considerable distance from other dwellings (from 300 to 400 yards), there does not appear to be much complaint of effluvia or foul odors.

To mitigate the difficulty I have made the following recommendations:

1. That the smaller and more dilapidated pen be removed.

2. That the other be repaired, and the floor made impermeable to fluids so as to prevent the fouling of the soil underneath.

3. That catch troughs, water-tight and large enough to carry all the fluids and excreta into tanks at south end of pen, be placed on each side of the building.

4. That the tanks, one placed at each south corner of the pen, be of sufficient capacity to contain all the accumulations for a sufficient time to enable frequent removal of contents for distribution upon the land, and to be plowed under the soil.

5. That the troughs and floors of pens be thoroughly scraped and flushed with water every day to prevent precipitation and accumulation of solid residue upon them.

6. That the tanks be emptied at latest every alternate day, but better every day.

With the above recommendations carried out, and they cannot be considered unreasonably exacting, the nuisance complained of will be abated to the satisfaction of the complainants.

I am also happy to say that Mr. King approves of and accepts the recommendations, and has promised to have them carried into efect.

All of which is respectfully submitted,

H. M. MacKAY.

Toronto, May 14th, 1889.

REPORT OF UNION SCHOOL, SIMCOE, COUNTY OF NORFOLK.

To the Chairman and Members of the Provincial Board of Health:

Gentlemen,—During a brief sojourn in the county town, where for more than forty years I was practising and where for more than twenty I was a member of the High School Board, I was requested by members of the present Board to visit the building and report on its present condition with the view of obtaining from the Provincial Board of Health, at its session in this month, their imprimatur of the outlay that in their judgment the present condition of the building imperatively calls. Accordingly on Saturday last, accompanied by Mr. Christie, the Principal of this Union School, I made an inspection and from the notes at the time taken beg to submit the following report:

I may premise these written notes with the statement that the building was erected in the year 1857, at a time when the number of scholars in attendance was very much smaller than at present and accordingly the accommodation then provided was considered fully equal to the sanitary requirements of the institution. May 10th, visited the building as mentioned at the special request of members of the Board, found the ventilation of the different rooms faulty in the extreme; floors in all the old parts of the building in a state of decay; the wide spaces between the boards the receiving places of dirt, dust and organic matter; the ventilation of the rooms open to the most grave objection, as a consequence the atmosphere of these class rooms during school hours is necessarily injurious to the health of both teachers and scholars.

On the Saturday morning that I visited the said school rooms, notwithstanding that since the closure on Friday afternoon with the windows open a heavy close smell was apparent on entering each room. Number of pupils in the common school, 425; for which number seven class rooms provided. Number of pupils in Grammar School I have forgotten. Floor space for each of four light rooms, 18x40. In a new wing some years back erected, two rooms each 18x30; Grammar School rooms, two in number, 50x30 each. Insufficient attention paid to the admission of light from the rear and the left of the pupils. Latrines very much too small for number of pupils and those for the use of

the boys in too close proximity with those allotted for the use of the girls. Recommended the adoption of the system of ventilation that a deputation of members of the Board, I was informed, had just returned from seeing most successfully in operation in the Toronto Public Schools, viz, Smead-Dowd system, the said system being in the experience of our Provincial Board one of the best to be determined on. Suggested also that all the old flooring in the various school rooms should be immediately on the closure of the school for the summer holidays be removed, and for the decaying pine floors narrow oak flooring should be substituted, tongued and grooved and forced into close approximation, then to be treated with two successive coats of boiling linseed oil. Further for the protection of the sight of the pupils there should be a strict avoidance of cross-lights, substituting as far as possible unilateral light, or if more or less necessarily bilateral, stronger on the left than on the right. Enlargement of play grounds sufficient to permit of the erection of separate covered buildings for boys and girls, so as to enable them to exercise on rainy days or during very sunny ones at the recreation period. Also suggested that the existing desks should be discarded and modern ones substituted better adapted for the proper attitude of the scholars being maintained during school hours without undue tiring of the spinal muscles. Neglected to enquire whether evidence of vaccination and revaccination was required before admission of the pupils to the school. Would also recommend that the report on the subject of School Hygiene, most exhaustively treated by Drs. Cassidy and Yeomans, members of our Board, and submitted to and adopted by the Hon. Mr. Ross, Minister of Education, for incorporation, be distributed for use by all the school teachers in these schools as also the school trustees, as from information it appears that such pamphlets are being distributed by the Education Department.

I might add that it would greatly add to the reputation of Simcoe, being one of the county towns in which sanitary legislation was viewed as the chief consideration by the city fathers, if in their very important hygienic measures adopted in recent years they would determine on adding some such system of pure water supply as has been recently carried out in Brantford.

APPENDIX

CONTAINING THE

ANNUAL REPORTS OF LOCAL BOARDS

IN THE VARIOUS

MUNICIPALITIES OF ONTARIO.

ANNUAL REPORTS OF LOCAL BOARDS OF HEALTH.

CITIES.

BRANTFORD.

MEDICAL HEALTH OFFICER'S REPORT.

In reporting on the sanitary condition of the city of Brantford and the work done in regard to it during the past year, I may first briefly mention that I have availed myself of opportunities occurring during the year for obtaining much valuable information on sanitary matters.

At Brockville, in company with Dr. Heath, I saw the practical operation of the Waring system of sewerage which is so strongly recommended for this city.

At Ottawa I had the privilege with the obliging co-operation of the Chief Analyst of personally making a number of analyses of milk according to the most approved methods used there.

At the meeting of the American Public Health Association in Brooklyn there was an opportunity of studying a large number of sanitary questions in company with many of the most scientific and experienced practical sanitarians on the continent.

I had also the opportunity with Dr. Bryce and other members of the Provincial Board of Health of examining the Brooklyn water-works system, also of investigating the sewage farm and works at Orange, New Jersey, which resemble those established by the Ontario Government at the London Asylum; also the sewage precipitation works at Coney Island which are worked on a plan similar in principle to that now being applied by the Ontario Government at the Agricultural College, Guelph.

We also saw in operation the Engle Crematory probably the most perfect Crematory yet devised.

Opinion is much divided as to the comparative merits of cremation of garbage by means of a furnace, and of dealing with it by what is called the Merz or Vienna process now in operation in Buffalo and other places.

We also investigated some of the most recent improvements in ventilation in connection with steam heating as applied to schools, hospitals, and other public institutions.

Some of the information thus acquired will I trust hereafter prove useful in dealing with various matters relating to the public health in the city.

DEATH RATE AND CONTAGIOUS DISEASES.

The general health of this city for the year ending October 1889 has been I am pleased to say better than for several previous years.

The actual number of deaths occurring within the city limits was 204, which in a population of 14,273 gives a death rate of 14,3 per 1,000, as compared with the rate of 16½ in 1888 and 1887.

The number of deaths from zymotic diseases was as follows, namely :—

From Typhoid fever, 9 deaths (13 in '88 and 8 in 1887.)
From Diphtheria 13 deaths (10 in '88 and 19 in 1887.)
Scarlet fever 1 death (0 in '88 and 2 in 1887.)
From measles 1 death (1 '88 and 0 in 1887.)
Whooping cough 4 deaths (5 in '88 and 1 in 1887.)
Cholera Infantum &c, 18 deaths (26 in '88 and 23 in 1887.)

TYPHOID FEVER.

The whole number of cases of typhoid fever in Brantford was 89, with 9 deaths.

Of the 89 cases 42 were treated in the hospital, exclusive of a number of cases in the suburbs of the city which are not included in this report.

In view of the relation between impure well water and typhoid fever, circulars were issued under instructions of this Board early in July advising the public against the use of raw water and strongly urging the previous boiling of all drinking water during the summer and autumn months.

A large number of families have acted on this advice and some cases of fever have probably thus been prevented.

Numerous enquires among the 89 reported cases show that few if any of them, practised boiling their drinking water and it is a reasonable supposition that had they all done so we should have had a less number of cases of typhoid fever to report.

The location of all the 89 reported cases of fever is recorded in the books of the Health Office. It is impossible to give them in detail in the limits of this report, but on examining the record it is seen that 50 or nearly $\frac{3}{4}$ of the cases occurred in situations where the sanitary conditions are known to be especially objectionable, such as contamination of the wells or to the pollution of the soil from long saturation with liquid refuse.

DIPHTHERIA.

Of diphtheria there were 58 cases reported but owing to the mildness and briefness of many cases of this disease they escaped notice and the reports are necessarily incomplete. Seven deaths from diphtheria or over one-half of all the fatal cases besides a number of other cases not fatal, sprang from the case of one little girl on Terrace Hill.

In a healthy neighborhood in a clean and tidy kitchen this child was accustomed to play at the kitchen sink, to pump water and watch it run down the waste pipe which led to a buried sink pit, she contracted a fatal diphtheria; her father took the disease from her and also died, and the other five deaths occurred in one house, that of an immediate neighbor visiting and directly exposed to this case. Nine other non-fatal cases occurred among the immediate neighbors also exposed.

A rigid exclusion of children in that neighborhood from school and the isolation as far as possible of all exposed persons happily prevented the wide extension of this local attack.

In previous reports I have referred to several instances of diphtheria from sink holes, connected with dwellings, and the sanitary inspector has done much in the way of exterminating such poisonous and dangerous structures.

CONTAGIOUS DISEASES AND SCHOOLS AND LIBRARIES.

The amendments to the Public Health Act, requiring the co-operation of teachers in the schools in notification of contagious diseases and preventing the circulation by public libraries of books exposed to infection, have been fairly carried out during the year. A difficulty in dealing with infected books has been that no apparatus or appliance for disfection of books was apparently known to exist, the cost of which was not greater than the value of the books ordinarily requiring disinfection.

I am glad to say however that we have now in operation an apparatus which will enable us to completely disinfect books as well as many other small articles with but little trouble and at the most trifling cost.

SEWERAGE.

In every annual report I have heretofore made to this Board I have referred to the neccessity of sewerage for this city. Many influential citizens have urged this matter in years past but up to the present hour not one rod of public sewer has ever been constructed.

Owing to the inauguration of the new water works system it is obvious that the volume of liquid refuse to be disposed of will at once be greatly increased and the necessity for sewerage and drainage will be greater than ever before.

It is plain that the public fully realize the necessity for this work being no longer delayed and that whenever a good, efficient and unobjectionable scheme is offered that can be carried out at a reasonable cost it will receive general support.

It is expected that such a scheme will shortly be brought forward and that there will be nothing to prevent the next council from taking the matter in hand. To that council it is hoped will belong the lasting credit of having carried out the much desired work.

DRY EARTH SYSTEM.

On account of absence of any sewerage in Brantford and the universal dependence on privy pits for some fifty years, with the common practice of covering old pits and digging new ones from time to time the land in many parts was honey-combed with these pits new and old, the earth was saturated with impurities, the ground air round most dwellings was impure and unwholesome and a large proportion of the wells were contaminated and dangerous; with the growth of the city, this evil was being constantly extended and more permanently established.

Under these circumstances the Board of Health of this city resolved some four years ago entirely to prohibit the further construction of any privy pits and as rapidly as possible to abolish those already existing, causing dry earth closets to be substituted for them.

The success of this work has been something remarkable, no new pit has been allowed to be constructed since that time, and many hundreds of old ones have been emptied, cleaned and filled up with clean fresh earth. This system is now exclusively in operation in all the public schools, in the county buildings and gaol, and in other public buildings and factories, and in close upon one thousand private premises. Of the 425 pits emptied during this year 190 were forever abolished, the pits being refilled with fresh earth.

The dry earth system does not in the least provide for the large volume of liquid refuse as tub-water, house slops, manufacturers' waste &c., &c., which unless there be ample grounds, must either be discharged into the street gutters or temporarily stored in cisterns.

It therefore remains absolutely essential in all the more populous parts of the city to have a good system of sewerage that should be established and the dry earth system universally carried out on all those premises where sewerage is not applied or to which it may not be extended.

GARBAGE QUESTION.

A good deal has been said on the garbage question and I have in previous reports urged the necessity of systematic removal of garbage by a public service. I have carefully investigated this matter and I do not regard a crematory as necessary or even desirable in Brantford at the present time.

No complete, successful and satisfactory cremation of garbage has yet been accomplished in any American city. In some great cities the partial efforts at cremation have been abandoned and the Merz or Vienna process substituted. Cremation has succeeded

with moderate quantities of selected garbage and the time may come when a small crematory for certain uses may be desirable here. The attempt to cremate great quantities of promiscuous garbage has, thus far, proved the process to be both extremely expensive and offensive. In this city for a generation to come all the dry refuse is required for filling in, and the limited amount of animal and vegetable refuse can be disposed of without difficulty.

It is believed that two one-horse carts provided by the corporation would be sufficient to give a sufficient good weekly garbage service, and it is recommended that at the beginning of the new year provision be made for this service.

MILK SUPPLY.

The milk supply of Brantford is at present derived from about 16 dairies with about 320 cows. Every one of these dairies has been inspected during the year, most of them several times, in regard to health, food and water supply of the cattle, and in regard to cleanliness of byres, dairies, utensils, &c, with results fairly satisfactory. Samples of milk from all the dairies have been tested several times. These samples are taken personally by the Sanitary Inspector; they are delivered to the Medical Health Officer by number only and after examination the names of the vendors are attached by the Inspector.

One test of course only proves the quality of the particular sample taken. It is quite possible that in some cases the particular sample examined was not as good as that usually supplied by that particular vendor and also some of those running high may possibly have been better than that usually supplied.

This view is confirmed by the fact that some of the dairies where these November tests were rather low in cream, are known to have good clean premises and to use good food. It is intended that these tests shall be frequently made, and much care will be needed by dairymen to keep up a uniform good standard of milk by the liberal use of the best foods, such as hay, meal etc.

OTHER MATTERS.

I have recently visited the public schools, and am pleased to say that every possible effort has been made by the trustees to keep them in as good a sanitary condition as the circumstances would permit

The water is of course bad, but this evil will soon be remedied. The heating arrangements, mostly by stoves, are unsatisfactory, but I cannot in this place enter fully into the subject.

The limits of this report also prevent a reference to some other important matters.

I conclude by saying that the location of this city is one naturally highly favorable from a sanitary point of view. The general death rate is low, and would be lower but from the undue amount of preventable disease, chiefly in the shape of typoid fever. With a good water supply and good drainage the amount of this disease may undoubtedly be reduced, if we are to place any value on the experience of other places, to one-third of the present amount, not to speak of the concurrent improvement in general health.

When these necessary works are completed and in full operation, there is no reason why Brantford should not take, as I believe she will take, a sanitary position in the first rank.

The cost of our new waterworks, of a sewerage system, and of other sanitary reforms will then also be found to be small as compared with the resulting enhanced value of all property in the city and its suburbs,

EGERTON GRIFFIN, M. D.,
Medical Health Officer.

BELLEVILLE.

MEDICAL HEALTH OFFICER'S REPORT.

I had orders issued for the cleaning of yards and emptying and disinfecting of water-closets. The inspector made a house to house inspection of the city, and reported to me any infraction of the law.

The slaughter-houses were visited regularly by the inspector, and I casually inspected them, and saw that the law was properly enforced. The inspector has performed his duties to my entire satisfaction, and is entitled to credit for the healthy state of the city. The mortality from January 1st, 1889 to November 1st, 1888, being one hundred and forty-two, is exactly the same number as last year. I have had reported to me for the past year, fourteen cases of sporadic scarlet fever, three cases of typhoid, six cases of diphtheritic croup and four cases of diphtheria. Not one case of scarlet fever terminated fatally; of the three cases of typhoid one terminated fatally, and of the cases of diphtheria reported not one case died; but out of the six cases of diphtheritic croup three terminated fatally. The medical men, with one exception, I believe, have reported all their cases to me. When I heard of a case I at once ascertained what doctor was in attendance, and dropped him a reminder, and the report was sent in. I drew the attention of the council, during the year, to several drains which, in my opinion were dangerous to the public health, and the council at once passed the necessary orders to have them cleansed and deepened. I would again press upon the council the absolute necessity of drainage. I am afraid that now that so many are taking the water from the water-works into their houses for all purposes, that the health of the inhabitants will suffer if means are not provided to carry the waste water away. I trust the council will appoint a scavenger for the city. It is almost impossible to carry out the requirements of the Health Act without one, and complaints are general about the parties who act as such, both as to charges, and also as to the manner in which they do the work. Early in the spring I wrote to the Secretary of the Provincial Board of Health, also to Mr. Christie, drawing their attention to the danger of our city water being contaminated with the sewage from the Deaf and Dumb Institute, and am happy to be able to say that the action of our Board has at last had the desired effect. At a meeting of the Provincial Board, held in the city of Toronto on October 4th, the Board requested the Government to introduce, as an experiment, the system of electrolysis of sewerage, (as carried on at the Crossness Works on the River Thames, in connection with the London sewage), at the Deaf and Dumb Institute, and trust that the Government will carry out the request of the Board, and thus do away with the complaints raised against that institution by the Board of Health of this city.

R. TRACY, M.D.,
Medical Health Officer.

GUELPH.

MEDICAL HEALTH OFFICER'S REPORT.

The number of deaths within the city limits during the past year was one hundred and forty-four (144), being at the rate of 13.095 per thousand, and forty-five less than last year, in a population of 10,413. The death rate in 1888 was 18.5. Every possible precaution has been taken to prevent the extension of scarlet fever, diphtheria, etc., in the schools, by rigidly excluding all children coming from houses where the diseases were known to exist.

During the year all the rooms in the different schools throughout the city were thoroughly disinfected every other week for two months. This was done at the time that a large number of cases of diphtheria was reported amongst the children of the city. Two hundred and twenty-one (221) cases of diphtheria have been reported during the

past year, sixty-five (65) of which were treated at St. Joseph's Hospital, and seventy-three (73) at the General Hospital, the remaining eighty-three (83) were treated at their own homes. Out of the two hundred and twenty-one cases which were reported eighteen proved fatal. Twenty-eight (28) cases of typhoid fever were reported, twenty-three of which were treated at the General Hospital, two (2) of which proved fatal. Eleven cases of scarlet fever were reported during the year, all of which recovered. I consider that the principal cause of such a large number number of cases of contagious diseases, is the absence of a system of sewerage. The saturation of the soil in the older parts of the city by liquid refuse has poisoned the ground and contaminated the air in and about our dwellings, which will rather increase these diseases rather than diminish them, unless the sewerage question is soon taken hold of. The Board of Health have urged the absolute necessity of a proper system of sewerage in the city, and are quite satisfied that until this is done, it will be impossible to prevent the drainage of materials dangerous to the public health into the river, and to keep the city in a really good sanitary state. There are a large number of wells in the city which I fear are badly contaminated, and which repeated examination have shown them to be. The work done in sanitary inspection during the year has been large; the inspector's books show that the following work has been done:—

Number of yards examined	253
Number of water-closets emptied	224
Number of yards found in good condition	200
Number of hog-pens removed	16
Number of notices served for dirty yards	62
Number of old wells cleaned	5
Analysis of well-water	6
Dead animals buried	124
Number of complaints made at inspector's office	150
Number of houses placarded for contagious diseases	194
Slaughter-houses inspected	8
Prosecutions for various breaches of the Health Act	3
Number of dairies examined	19
Samples of milk examined	14

In two cases the milk was found to be watered, but after lecturing the parties well, they were allowed to go, promising not to offend again. In my last report I called the attention of our Board to the garbage question, and urged the necessity of some systematic removal of garbage being undertaken as a public work. I find in some places this work has been undertaken by the Board of Health, but in most places the city council has dealt with it. It is a matter all must recognize as very important from a sanitary point of view, and which has been time and again, in one way or another, brought to the knowledge of our Board. At all events the public requirements in this respect are such as to make it imperative that some scheme should be devised.

With respect to the removal of night soil and the emptying of privy vaults during the year, the work has been most satisfactorily carried out by the contractor, and his mode of disposing of it offers, in my estimation, no special objection in a sanitary point of view, whilst it is a material benefit to the parties who purchase it.

During the past year the wards set apart at the General Hospital and St. Joseph's for contagious diseases have been fully occupied; a large number of the diphtheria cases have been sent to them, where they have been well treated. Thirty-two permits to obtain licenses to sell milk have been granted this year, subject to cancellation for infraction of the by-law.

At the last meeting of the Board complaints were laid before it with respect to the condition of the river, between the Eramosa bridge and Allan's. At this time the water had been drawn off for the purpose of repairing the dam, thereby exposing the whole bed of the river. The board decided to telegraph for the secretary of the Provincial Board of Health to come up and give his opinion concerning the state of the river.

Doctor Bryce arrived in Guelph the next day, when the members of the city Board of Health met him and inspected the river from Allan's bridge to Goldie's Mill, after which the Board and Doctor Bryce discussed the matter, when it was proposed that the secretary of the Provincial Board should submit his report in writing as to what he considered the best steps for the Board to take in the matter.

The duties of sanitary inspector, which are very often neither pleasant nor easy, have been discharged by Captain Clark, to my entire satisfaction, and to his active efforts I attribute, to a large extent, the healthy and cleanly condition of the city.

T. A. KEATING, M.D.
Medical Health Officer.

HAMILTON.

MEDICAL HEALTH OFFICER'S REPORT.

Judging from the number of deaths which occurred during the past year, and also from the reports of contagious diseases received at the health office, the sanitary condition of the city was now better; 683 city deaths have been reported during the year ending 31st October, 1889, which is 46 less than occurred in the corresponding months of the previous year. According to the census taken by our assessors, the population shows only the small increase of 336. This has been due to the removal from Hamilton of a large number of Grand Trunk railway mechanics and their families to other points on that line. As the city still continues its old boundaries we cannot avail ourselves (as some places can) of a newly annexed population to diminish the death-rate. It is however very satisfactory to be able to show a decrease independently of any such source.

The death-rate this year is 15·3 per 1,000.

The number of contagious diseases reported (excluding a few cases of measles) is 362, viz.: Scarlatina, 151 cases and 2 deaths; diphtheria, 62 cases and 15 deaths; typhoid fever, 149 cases and 6 deaths. There were 22 cases less of scarlatina than in 1888, and 101 cases less of diphtheria. This latter shows a very sensible decrease of a very dangerous disease. No case of it was reported from the 25th July until the 14th of September, and none from that date until the 28th October. Typhoid fever shows an increase of 25 cases with 6 deaths against 12 deaths in 1888—18 of those cases were reported as enteric fever. Medical authorities state the causes of typhoid fever to be numerous and include all kinds of foulness, whether of the air we breathe, the water we drink, or the food we eat, we should therefore study to avoid exposure to all exciting causes, by keeping our dwellings and premises clean, dry and free from foul emanations, our drinking water should be free from contamination of decomposed matter, our reservoirs should be well looked after and cleansed out every year, an infinitesimal dose of medicine is said to have wondrous effects upon the human system. Why then should not an infinitesimal dose of sewage have its peculiar effects. Our food should be wholesome and free from decomposition (that post prandial delicacy in the shape of decomposed cheese is given as one of the causes of enteric fever). Our sewers should be well flushed out at repeated short intervals especially in dry seasons. Judicious ventilation should be observed, and the sun should be allowed free access into our houses. Very few study the essentials of good health, to do so would entail a life of misery on some people.

The sanitary condition of the city has received the usual amount of attention, a bad spot is occasionally brought to our notice which often takes time to get it rectified—the work of the inspectors has been compiled for your notice, their reports are very satisfactory, and special attention has been paid to the market. When your officers get settled in their permanent building a better system of routine I think can be established. Breaches of the health laws have occasionally been brought before the magistrate. I should like to see your inspectors better supported in their work, by sufficient fines being imposed.

Milk Inspector Nixon reports having made 305 inspections and 150 passing visits. The number of cow-byres in the city is: 1st class, 3; 2nd class, 70; 3rd class 9; total, 82. Many of those rated second-class would rate first-class if they had proper sewerage arrangements and connections. The number of licensed dairies or places where milk is sold is 45; total number of licensed cattle, 246; unlicensed (belonging to private families) about 30.

With regard to the above classing of cow-byres I daresay that in taking a comparative standard of all the byres in the city, the above rating is correct, but in my own experience I have not yet seen a cow-byre which could rank as No. 1, and I would have great conscientious difficulty in rating them No. 2.

During the months of June, July, August, September and October, 445 samples of milk were examined at the health office, with the following results: 18 samples showed under 3 per cent. of fat; 19, 3 per cent.; 70, 3¼ per cent.; 150, 3½ per cent.; 125, 3¾ per cent.; 29, 4 per cent; 27, from 4 to 5½ per cent.; 5, 6 per cent.; 2, 6¼ per cent.; percentage of butter fat 3.61½; all the samples were examined with the Fesor lactoscope, the readings of which (when properly observed) taken in connection with the corrected specific gravity, determine with reasonable certainty the approximate value of milk whether very good or very poor. A few samples showing 6 per cent. and over of butter fat with the lactoscope were received at the office. The inspector informs me that on one occasion he saw the cows milked and took the sample himself. On Tuesday last, in company with the inspector, I saw the same cows milked and took the sample myself, having first stirred the milk well up. I examined it next morning when it showed 4½ per cent. Between the taking of the two samples however the cows had not had their usual feeding of brewers' grains, but had mangolds instead. I do not think that brewers' grains have any specific value in the production of butter fat, but mangels produces poor milk. Notwithstanding all that has been said and written to discourage us in testing milk, we have still proceeded onwards, and as long as we satisfy the public we care very little how much may be said by a few interested individuals. There is no underhand work going on in the health office. I have never yet known, either by wink, nod or other means whose milk I was examining. The city cows, as a rule, give good milk, and I would recommend that all the country milk dealers should be charged $5 for their license; they pay no city taxes and have the use of streets free of charge, the fee of $1 is only a nominal fee. There are a few country dealers who have not complied with the by-law who send their milk to the Farmer's Dairy Co., the man who brings in their milk took out a license for his own milk. I would recommend that his license be taken from him while he continues to do so; it is not fair to some dealers who have complied with the by-law and have taken out their license. In accordance to your instructions I wrote to the health officers of the adjoining townships for their co-operation with regard to the inspection of milch cows and cow-byres. Some three or four answered my letters, the township of Barton made no reply. I am of opinion that any inspection made by a Hamilton inspector would, under the existing laws, be so much time and money wasted. I wrote last session to the Honouable the Provincial Secretary asking to give municipalities certain powers over their milk supplies coming from outside districts, I received a reply that it was too late in the session to do anything. I presume that as soon as the session opens that the matter will be taken into serious consideration. With regard to the taking samples of milk it is usual for the inspector to get the sample himself having first stirred up the milk, and take it from the centre of the can, those are the instructions I gave to your inspector. Why there should be any obstacle in carrying out these rules I do not know; if the inspector cannot help himself to the sample he has no right to give a duplicate sample, the latter is nothing short of a humbug anyway, if a milk standard was in existence and an analyist in the city there might be some reason for giving one. Your inspector informs me that there are only four milk dealers who dip the milk from the can, all the others supply it from the tap. Now if milk from the tap such as we have lately got shows such a good percentage of butter fat, is it not reasonable to suppose that all good milk would show a similar quality. It is rather strange that some of the milk examined by me never gave over 3½ and sometimes as low as 3¼, was it by some

mysterious inspiration this man's milk was singled out to give it a low standard? I rather think that individual had better reasons for knowing why his standard was low.

The last hospital milk examined by me showed only $2\frac{3}{4}$ butter fat. I would recommend that the hospital physician should be supplied with a lactoscope to examine the milk every morning immediately on its arrival.

During last summer I received a circular asking questions regarding the spread of contagious diseases from cattle. I do not suppose that one medical man out of a hundred could answer them from his individual experience.

MORALITY IN HAMILTON IN 1889.

The mortality of Hamilton for the year 1889 brings the ratio of deaths down to the lowest figures yet attained in fourteen years. It numbers 651, which, with a population of 44,635, places the rate at 14.58. Four hundred and fifty-six were interred in Burlington cemetery, one hundred and thirty-four in the Roman Catholic cemetery, and sixty-one were removed to distant burial grounds. The total number of burials in Burlington cemetery was 597, which includes forty-one stillborn children and one hundred non-residents who do not comprise any part of our population. The total burials in the Roman Catholic cemetary were 149, which includes six stillborn children and nine non-residents. The following tables may prove interesting to some people. I am sorry, however, to say that a sufficient amount of interest does not appear to prevail to a very large extent. The causes of death when accurately given ought to teach us in what direction to extend our usefulness in diminishing mortality. The large number of deaths which occur among children under one year of age is remarkable, and is due more to misguided treatment at home than from the unsanitary conditions which may exist, although the latter might contribute to a certain degree. Of the 651 deaths, 275 are under twenty years of age; 230 are under five years, and 183 are under one year.

—	1889.	1888.	Difference.
Under one year	183	208	25
One and under two	34	39	5
Two " three	4	21	17
Three " four	4	22	18
Four " five	5	8	3
Five " ten	21	27	62
Ten " twenty	24	45	21
	275	370	95 less.

The Chief Causes of Death of Children under one Year of Age.

—	1889.	1888.	
Premature births	15	27	12
Debility	30	29	x 1
Diarrhœal diseases	50	36	x14
Lung affection	14	28	14
Brain affection	11	15	3
Convulsions	12	27	15
Marasmus	6	14	8
Other causes	45	32	x13

Premature cases all died shortly after birth. Those from debility not exceeding a few weeks

Prevalence of Contagious Diseases by Wards.

Wards.	Scarlatina.	Diphtheria.	Typhoid fever.	Totals.	Ward population.	Ratio of cases per 1,000.
1	21	7	8	36	3,997	9.00
2	10	2	3	15	4,219	3.55
3	27	14	18	59	7,029	8.37
4	17	5	15	37	6,987	5.29
5	13	9	26	48	6,650	7.21
6	21	16	21	58	6,694	8.66
7	52	4	21	77	9,059	8.50
Totals	161	57	112	330	44,635	
Deaths	4	10	11	25		

Population south of King street, 15,245 ; rate, 7.21. Population north of King street, 29,390 ; rate, 7.48. Wards 4 and 5, 13,637 ; rate, 6.23. Wards 6 and 7, 15,753 ; rate, 8.56.

Prevalence of Contagious Diseases by Months.

Month.	Scarlatina.	Diphtheria.	Typhoid fever.	Total.	Monthly Mortality, 1889.		
					Male.	Female.	Total.
January	18	12	2	32	25	34	49
February	13	5	5	23	27	22	49
March	15	2	2	19	33	20	53
April	16	6	2	24	33	24	57
May	12	8	1	21	38	26	64
June	10	3	2	15	31	17	48
July	5	7	6	18	39	39	78
August	4	0	24	28	40	21	61
September	13	1	33	47	21	24	45
October	13	2	20	35	28	31	59
November	23	9	5	37	22	23	45
December	19	2	10	31	18	25	43
Total	161	57	112	330	355	296	651

Scarlatina—ratio per 1,000, 3.6.

Diphtheria—ratio per 1,000, 1.2.

Typhoid fever—ratio per 1,000, 2.5.

Comparative Statement of Population and Deaths for the Fourteen Years.

Year.	City Mortality.	Population.	Death rate per 1,000.	Burial Grounds.		
				Burlington Cemetery.	R. Catholic Cemetery.	Distant burial grounds.
1876	688	31,708	21.69	483	170	35
1877	690	32,641	21.13	512	148	30
1878	599	33,511	17.86	420	131	48
1879	674	34,268	19.67	468	148	58
1880	626	35,009	17.88	449	127	50
1881	642	35,359	18.15	448	154	40
1882	657	36,946	17.78	469	142	46
1883	714	38,196	18.68	495	163	56
1884	687	39,216	17.51	486	150	51
1885	691	39,985	17.28	485	155	51
1886	767	41,280	18.57	535	178	54
1887	699	43,080	16.43	486	160	53
1888	749	44,299	16.9	534	162	53
1889	651	44,635	14.58	456	134	61

Non-residents and stillborn are excluded from our mortality.

J. RYALL, M.D.,
Medical Health Officer.

KINGSTON.

MEDICAL HEALTH OFFICER'S REPORT.

In submitting my annual report, I beg leave to state that during the early summer we had all premises, yards, cellars, etc., examined and cleaned out where necessary, disinfected and otherwise attended to. There were 471 permits issued during the year to clean out privy pits and thoroughly disinfect with lime after being emptied, from which was taken 22,000 cubic feet of excrement which was carted away, by the odourless system, into the country to be used upon the land.

The dry earth system is coming more into use. This system is regulated by a by-law passed by the corporation, under which a scavenger is employed to remove the matter at regular intervals, the fees for such removal is fixed at a cheap rate to induce owners and occupants to adopt this plan in preference to the pits which are at best a hot-bed of disease and no doubt the cause of a large proportion of the cases of contagious diseases in our midst.

The necessity of having tenement houses inspected, and those found unfit for occupation condemned, is apparent. Many houses exist in the city which are not fit for habitation, and which in many cases are occupied by large families.

During the year the sanitary inspector and myself have brought to the notice of the city council the necessity of causing drains required to be constructed, to be built under the supervision of the city engineer. By so doing we would have under our care the proper trapping, etc., necessary to all dwellings, and would now repeat this request.

I would recommend that cow-byres be not allowed within a certain area, say the present fire limits of the city, and no one be allowed to keep cows within the city without having first obtained permission from the Board of Health.

The Board of Health during the year closed up a number of wells for the reason that they were polluted by surface drainage, privy pits, and other causes which made the water unfit for use.

The city water works system is now about complete, the rates are very moderate and there is a prospect of a still further reduction. I hope the necessity of compelling citizens to close up bad wells will be a thing of the past, as bad water, like untrapped drains and decomposing filth, are dangerous to the health of the community, such being the prolific cause of typhoid fever, cholera, diarrhœa, etc.

Milk.—A lengthy by-law has been passed this year by our city fathers, taking this matter out of the hands of the Local Board of Health, with what results remains yet to be seen.

During the past year the city council, in their wisdom, widened Young street, which now will allow of abundant oxygen instead of foul air confined in a narrow lane. As the law at present requires the council's consent to the opening of new streets of a less width than 66 feet, I earnestly advise that no narrow streets be allowed, as they are a source of disease in many forms.

Systematic inspection during the summer was accomplished by sanitary police, by order of the mayor, and I must say that it was well done.

After having been called upon in many instances to examine houses where foul gases and unpleasant odours existed, arising from one cause or another, I am convinced the dangerous conditions in which I found many houses, occupied by families, were the result of culpable negligence or ignorance, or both on the part of plumbers. I am of the opinion that it would be in the interest of the public health were a by-law passed licensing and regulating plumbing, so that no plumber could secure a license who is not a thoroughly competent person.

The condition of our streets demands attention ; the depth of mud upon them shows they require to be scraped oftener than at present, if the health of the community is at all cared for.

The health of our city during the present year has been tolerably good ; we have, however, had a great many cases of malarial fever attributed to the very wet season and sudden changes of temperature.

SAMUEL H. FEE, M. D.,
Medical Health Officer.

LONDON.

MEDICAL HEALTH OFFICER'S REPORT.

"In presenting my fourth annual report upon the sanitary condition of the city for the year ending October 31st, it gives me pleasure to state that the health of the city during the year has been exceedingly good. Much good work has been done ; innumerable complaints have been attended to ; many have been compelled to connect their yards and premises with the public sewers. Forty-seven wells have been closed, and a large number cleaned. Sixty-eight samples of well water and ninety of milk have been analyzed at this office.

"Three hundred and sixty-five deaths took place during the year, as compared with 438 last year and 455 the year before. Estimating the population of the city at 27,000, this gives a death rate of 13.14 in the 1,000, compared with 16 last year and 17.16 the year before. The death rate has thus decreased in four years from 23 in the 1,000 to 13.14.

"The mortality from preventable diseases has also largely decreased. For example, there were only nine deaths from diphtheria this year, compared with fifteen last year. Of typhoid fever there were but four deaths this year, compared with eight last year. Consumption, as usual, carried off the largest number, being credited with 30. Cancer caused the deaths of 16 ; small-pox one, and scarlet fever none.

"The death from small-pox was that of a lady who had been visiting in Southwold a family, two or three of whose members were ill at the time, although the true character of the disease does not appear to have been suspected. Two days after her return she was attacked by a most virulent type of small-pox, and died on the fourth day. She had never been successfully vaccinated. Every precaution was taken to prevent the disease spreading. All those who had been exposed were vaccinated, and no more cases occurred.

"*Well Water and Typhoid Fever.*—A mild form of typhoid fever prevailed during the autumn months, which, with the exception of three imported cases and four doubtful ones, were all traced to the drinking of contaminated well water. In a former report the attention of the Board was called to the necessity, in the interests of the public health, of having all wells closed wherever the city water was available. To give an illustration of how these polluted wells spread disease, take the recent cases of typhoid fever on Oxford and George streets, Here, in a group of six dwellings, five families used well water, which, upon examination, was found to be wholly unfit for domestic purposes. These five families—fifteen persons in all—contracted typhoid fever, while the families living in the centre of the group used the city water, and remained entirely free from the disease. Seventy per cent. of all the wells examined in the city this year were found more or less contaminated. The finding of skeletons of rats, toads, and even cats, is not of infrequent occurrence. It would be interesting to know what had become of the soft parts of these animals. If the city council would cause these wells to be closed, or if necessary, obtain legislation to enable them to do so, it would very sensibly lessen the mortality from typhoid fever and diphtheria.

"*Sewers.*—A communication was sent from this office in March to the Board of Health, recommending the extension of the Dundas street sewer from Adelaide street one block east. The matter was referred to the city council with a recommendation that the work be done. It was found, however, that a majority of the ratepayers interested were opposed to the extension on account of the expense, and No. 2 Committee threw it out in consequence. This extension is very much needed, the population being dense and the drainage imperfect.

"*Carling's Creek.*—The water course known as Carling Creek is still the cause of sickness in that part of the city, and endless trouble to the Board of Health. Until recently the sewage from the barracks emptied into this creek, under the Elizabeth street bridge, where it became dammed up, to the annoyance of people living in that vicinity. At the request of the Board the commanding officer, under instructions from Ottawa, caused the drain to be moved so as to enter the creek below the bridge, allowing the sewage to flow along more readily. The creek drains an area of about one mile—from Dufferin Avenue on the south to St. James' street on the north, or fully three-fifths of the city. The absence of sewers in the northern parts of the city makes it still more imperative that some action be taken towards converting this creek into a trunk sewer. Leaving out of the question the fact that real estate is depreciated in value in this part of the city on account of this creek in its present condition, much unnecessary sickness and expense would be avoided and valuable lives saved. So long as there are plenty of rains to keep the creek well flushed the damage will not be so great; but let there come a dry, hot summer, and the mortality from typhoid fever and diphtheria would show the folly of allowing an open sewer like this to run almost through the heart of the city.

"*Isolation Hospital.*—If it is the intention of the Hospital Trust to erect a suitable cottage or ward for the reception of cases of infectious diseases, which should not be sent to the General Hospital, the work cannot be commenced any too soon. The deaths of four children recently in one dwelling on Adelaide street from diphtheria is an example of the necessity of promptly isolating first cases. It is certainly harsh and improper to shut up the healthy with the sick, subjecting all to the danger of infection, besides preventing the wage-earner from following his employment at a time when his family most need his help. By sending first cases to the isolation hospital, where they will have medical attendance, better nursing, better ventilation and sick comforts than in their own homes, where very often these necessaries cannot be procured, their chances of recovery

will be much better, besides frequently relieving the city of the expense of providing for the families, and allowing them, after a few days' quarantine and disinfection, to resume their occupations.

"The inspection of milk, dairies, cow-byres and meat offered for sale on the market has been very thoroughly carried out, a report of which will be made at a future time."

T. V. HUTCHINSON, M.D.,
Medical Health Officer

OTTAWA.

MEDICAL HEALTH OFFICER'S REPORT.

In laying before you the report of the Health Department for the year ending October 31st, 1889, I have the pleasure to state that the general health of the city during that period has been fairly good and under the circumstances such as to compare favorably with other cities of this province. Though we have not been free from some of the forms of epidemic diseases, and notwithstanding the annexation to the city of a large territory much in need of sanitary reform, it is satisfactory to know that the death rate per thousand of the population for the last twelve months has been somewhat less than that of the previous year.

From the mortuary tables here appended, shewing in detail the various causes of death, it is evident that the number of victims from preventable diseases is as yet much larger than it should be. That this to a large extent is the result of defects in the sanitary condition of our city that will at the earliest possible moment receive the favorable consideration of the municipal authorities there seems to be no reasonable doubt. That this result is partly due to ignorance or wilful neglect to observe the rules and regulations of this department must also be admitted. Among the contagious diseases which prevailed more or less extensively during the year that justly dreaded malady diphtheria stands prominently, having made in the very first month of the year more victims than any previous month in the history of this city. Though propagated by personal infection chiefly, it is admitted by those best informed on the subject that this disease generally has its origin in the evil effects of defective house plumbing and draining.

Whooping-cough and measles, the first of which is hardly controllable, were also very prevalent during the latter part of the winter and spring months and to a limited extent contributed to swell our death roll, as is shown in comparative table of deaths from zymotic diseases appended; in which also appears our comparative immunity from scarlet fever during the same period.

Typhoid fever was somewhat more prevalent during the last season than during the previous one, especially in that section lately annexed to the city. This in my estimation was largely owing to the well water used by the inhabitants of that locality for household purposes, and in all probability partly due to the excavations there made this season for the extension of our water supply, a work of immense importance in a sanitary point of view, notwithstanding the temporary evil effects its execution may have been productive of, which the people of that locality will early appreciate.

The hospitals for the isolation and care of contagious diseases have been maintained throughout the year on a satisfactory footing of efficiency. The enforcement of the law as regards the isolation of such cases in these institutions still receives much vexatious opposition, and this is the more to be regretted in as much as the most stubborn generally are those parties who on account of their circumstances would benefit most by this measure of safety which after all is the only reliable one in nine cases out of ten to prevent the spread of such infection, to guard the interest of the community as well as to secure the safe recovery of the infected. The number of cases admitted and cared for in these hospitals during the year is shown in an appended table in which also appear the deaths resulting therefrom.

The number of epidemic diseases reported to this department during the year were as follows :—

Diphtheria	134
Measles	143
Scarlet fever	8
Typhoid fever	67
Total	352

I regret that I cannot look upon these figures as very reliable, with the exception perhaps of diphtheria which may be nearly correct ; the law requiring that the Health Department be notified of the existence of any such case, I fear is yet in many instances ignored.

Whatever may have been the differences of opinion in the past as regards the purity of our water supply, the palpable defection latterly of the clear water-pipe left no reasonable ground for further delay or hesitation to bring about such alterations as would seem best for the public good.

That the municipal authorities have met the situation promptly and effectively so far as it lies in their power by taking immediate steps to replace the decayed intake pipe yet in use by a metallic one and extending the same far beyond the present inlet, is a subject upon which I may justly congratulate the public.

Whilst recognizing the importance of pure air and pure water for the maintenance of health, it would be folly to neglect the food upon which we depend for nourishment. To secure purity in milk alone as an article of food, more especially for the little ones almost solely dependent upon it, is admittedly of paramount importance and it would no doubt go far towards the prevention of infantile diarrhœal diseases generally so prevalent during the summer season.

With this object in view your board have recommended and the city council has passed, in September last, By-law No. 993, entitled a By-law respecting the Public Health By-law, which I feel confident will enable us to better control and regulate the sale of this article in this city.

Through seemingly uncontrollable circumstances which have prevented us from making as rapid sanitary progress as would have been the earnest wish of all who are most anxious to secure the well being of the community, it is but justice to record the completion during the year of such public works as the Richmond Road sewer, the Rideau Ward sewer and St. Andrew Street drain, all of which are works of vast importance in a sanitary point of view. That the past year has also been individually one of satisfactory sanitary progress may be gathered from the sanitary inspector's report here appended, to which I beg to refer you for details as regards the abatement of nuisances, the removal of household refuse and ordinary garbage and the removal of night soil. In the discharge of the duties devolving upon this office, even though it be a repetition of what has been urged in past reports, I cannot close this without stating that so long as the necessary facilities are not given private individuals to put dwelling houses and their surroundings in that sanitary condition which can only be secured by the construction of public drains wherever wanted and the organization of a proper system of scavenging throughout the city, just so long will our death roll be longer than it should be. That these sanitary defects, causing as they do yearly loss to the state as well as severe loss and sore affliction to many families, are grievances the municipal authorities are in duty bound to remedy at the earliest possible period of time is beyond question.

As bearing upon this important matter, allow me to draw your attention to a fact also apparent in the sanitary inspector's report which cannot be overlooked : that at least one-half of all the unsanitary conditions complained of are either directly or indirectly the outcome of defective plumbing or drainage or both, or the result of the want of public drains. A strong plea it must be admitted, not only urging the completion of

subsidiary drains, but a strong plea also for the most vigilant supervision of such works, either private or public, by a competent person in connection with this department. Though the sanitary inspector takes cognizance of all complaints, taking also the necessary steps to procure their abatement, he cannot superintend the work necessitated nor can he in many instances control it when finished. As a consequence the unfortunate citizen, let him be ever so anxious to secure the well-being of his household or however willing he may be to comply with the requirements of the laws of health and to conform to the rules and regulations of this department, he is at the complete mercy of those who in many instances are either ignorant or careless of the consequences of their defective workmanship.

A. ROBILLARD, M.D.,
Medical Health Officer.

ST. THOMAS.

MEDICAL HEALTH OFFICER'S REPORT.

It gives me pleasure, as Medical Health Officer, to present my annual report and in so doing to be able to state that our city has been more than ordinarily free from contagious diseases during the year.

Although 35 cases of scarlet fever have been reported to me, they were nearly all of a mild type, and no deaths resulted.

Of diphtheria ten cases were reported and one death.

The common forms of fevers have been frequent, but only one case of typhoid was reported to me during the ten months.

The usual placarding and preventive measures were exercised in all cases of contagious diseases reported.

The mortuary statistics for the Dominion during the year 1889, show the death rate percentage for the city to be as low or lower than any of equal population in the Dominion.

In the month of February, small-pox broke out a few miles west of St. Thomas, resulting in a large percentage of deaths, but no doubt owing to the energetic measures adopted by our Board of Health in establishing quarantine and guarding all points of entrance into the city from the infected district, we were happily saved from an invasion of this dread disease.

The mayor having issued a proclamation for compulsory vaccination, I visited all the public schools and found over 1,100 pupils with certificates of successful vaccination and in addition vaccinated 400, also about 100 city poor were vaccinated by me.

Vaccination of the citizens and R. R. employeés was general.

The Secretary of the Provincial Board visited the city at this period. A more commodious and comfortable quarantine hospital was erected than the one formerly secured for that purpose, but I am thankful to say it has not yet been required.

During the year the sanitary inspector has made a house to house inspection, and reports some improvements in condition of cellars, backyards, outhouses, etc.

The city has not yet a common supply of water for household use. That for fire and mechanical purposes has thus far been adequate. Considering the lack for domestic use, the general health of the city has been remarkable and I attribute it largely to the good drainage, several thousand feet of additional sewer pipe having been laid this year.

I am of the opinion that the death rate would be still lower if a pure water supply was general.

J. B. TWEEDALE, M.D.,
Medical Health Officer.

ST. CATHARINES.

CHAIRMAN'S REPORT.

In accordance with the provisions of the Public Health Act, I have the honor to submit the annual report of the Local Board of Health of the city of St. Catharines for year ending 30th November, 1889.

I am much pleased to be able to report the general health of the city improved, and much better than last year. Upon examination of the statistical report of the city clerk, I find the percentage of death is reduced.

It is also a gratification to know that our Board has not been obliged to incur any extraordinary expenses, beyond the usual charges for burying dead animals, printing accounts, allowance to caretaker of hospital building, and the salary of sanitary inspector, thereby enabling the board to keep the expenditure within the appropriation of five hundred dollars.

Our Board has been called upon to provide room, and other necessary treatment for a patient that had been placed in the General Hospital, who owing to an infectious disease, had to be removed. This is an expense that would not have occurred if proper arrangements had been made with the hospital directors, to have a building set apart for that purpose, as per report made to our council last year. Our Board consider this is a matter which should receive the council's earliest attention.

The extension of the water works having been commenced, our Board contemplate after a reasonable time has elapsed, to order all wells existing where the city water can be obtained to be closed. There is no doubt quite a benefit has been derived from drainage done in some localities, and our Board would respectfully suggest that the drainage system be continued, especially in localities where immediate benefits are likely to be expected.

The King and Queen Street sewer has been a source of considerable annoyance during the past season. At the request of our Board the superintendent of water works has kindly ordered the sewer flushed upon two or three different occasions. The Board think it desirable that some arrangement be made whereby this sewer could be automatically flushed out at regular intervals of at least once a week during the hot season.

The sanitary inspector has performed his duties satisfactorily, and without having to resort to any harsh measures. He has caused a large amount of sanitary work to be done.

There were reported to the city clerk during the year 77 cases of infectious diseases, only 12 of which proved fatal. The total deaths from all causes was 158, from this number I deduct 32 deaths which occurred from causes not connected with any special decease. As follows, 13 still born, 5 premature birth, 3 accident, 9 old age, 1 poison, and 1 suicide. Making the total deaths from diseases of various kinds 126, or a death-rate for the year 1889 of 12.6 per 1,000. This is the best showing the city has made for a number of years, and much better I believe than reported in other cities, owing no doubt to a more general use of city water, and sanitary work executed through the exertions of our Board.

The lock No. 2 pond which the council has for some time been endeavoring to have the Dominion Government either fill up or deepen, the impression having gone abroad that said pond was in an unsanitary condition, our Board on the 15th February last passed a resolution requesting the Government to proceed with the work, and sent a memorial to that effect. I received an answer in reply to our request from A. P. Bradley, Esq., secretary of the Department of Railways and Canals, stating, that the matter was then before the chief engineer of canals with a view of remedying the evil complained of. The contract for deepening pond has been let to Capt. James Murray, who is now engaged in doing the work.

There has been some dissatisfaction expressed with regard to the manner which the work was being done, or more particularly the way of depositing the material on shore line of pond. I presume the contractor is doing the work in accordance with the specifications of his contract, given him by the chief engineer of canals over whom we have no control.

As there is a diversity of opinion among citizens, as to the propriety of doing the work in the way it has been done, and the evil effects or otherwise, I invited Dr. Bryce, secretary of the Provincial Board of Health, to come here and visit the locality, and give us the benefit of his opinion, which I trust will be satisfactory to all concerned, and be the end of all discussion *re* the celebrated lock 2 pond.

There are, however, other ponds within the city limits which our Board intend to investigate at an early day, and if found to be malarial will at once call the attention of of the Govearnmeut to the fact.

S. G. DOLSON,
Chairman.

TORONTO.

MEDICAL HEALTH OFFICER'S REPORT.

I have the honor to present a final report for the departmental year 1888-89, which is supplementary to the monthly statements already submitted, and a summary of the year's work. Without traversing the ground of the monthly reports, it is deemed proper to refer to some points which can more conveniently be dealt with at the close of the year. At such a time it is well to take stock, as it were—notice what has been accomplished, what requires to be done, and the best means of securing the desired end. No one but those engaged in the work can understand fully the extent of the work which has been done, the difficulties encountered and overcome, and the reason why every effort to obtain sanitary reform has not been crowned with success. Many of these are, however, explained in the reports which from time to time have been made to the Board, and it is not intended to dwell upon them now; except to remark that it is manifestly unjust to blame the department when alarms arise, for the existence of evils which have been repeatedly pointed out, and which the department has been powerless to remove.

Since the Public Health Act came into force five years ago, the condition of the Medical Health Department has been one of growth and development. At first, it must be remembered, the public and the authorities failed to recognize the importance, even the necessity, of any sanitary reform. Gradually, however, a change has taken place. Although the warnings given of insanitary evils were at first unheeded, ultimately the danger became apparent, and the requirements of the department to deal with insanitary evils have in a measure been provided; but much remains undone. There is no longer an open sewer traversing the University Grounds under the name of a "creek." The most of the "Garrison Creek" has likewise been superseded by a proper sewer; also Rosedale Creek will soon be a thing of the past; but we have a so-called water front, which is in reality a stretch from dock to dock of sewage slightly diluted with water, which is at once disgusting to look at, offensive to smell, and a breeding place for the germs of disease.

Although it is several years since the necessity was pointed out of having an eastern and a western channel into Ashbridge's Bay, that the lake water might flow in so as to at least dilute the filthy water of the bay, only one channel is yet constructed, while the quantity of sewage poured into the bay is constantly increasing. Drainage to houses has

been obtained to a large extent (135 during the last year, not including new buildings) but there are still a good many dwellings without house drainage, the slops of which are thrown in the yards or street to pollute the air.

One hundred and forty-three privy pits have been closed, but a large number remain, from which emanate the seeds of disease. Most of the wells have been closed or are no longer used, but in a few places water which cannot be otherwise than polluted is still in use. Contrary to the provisions of the Public Health Act, and contrary to recognized health laws, garbage is still deposited to level up low lots, or to help in making land. Strenuous efforts have been made during the past summer to put a stop to this great evil, with only limited success. But these efforts, as in many other cases, are like cutting off the branches of a tree when the tree itself should be uprooted. It is impossible to remedy the evil until provision is made to destroy by fire all garbage, including the refuse of the slaughter houses, decayed vegetables, stale fish, dead animals, and such manure as may not be required for fertilizing purposes. In a word, all refuse organic matter which, in the process of decomposition, is likely to form a breeding place for the germs of disease. Much has been done in the way of filling up the beds of stagnant pools in the bed of Garrison Creek and elsewhere, but beside the water front and Ashbridge's Bay, there is the bed of the old Don full of reeking filth, and a serious menace to the public health.

During the past season the sanitary condition of the Island has been maintained in a more satisfactory manner than in previous years; but until all the lagoons are either filled with sand or connected with the bay by two channels to permit a current, there will be an ever-increasing source of danger to the public, and until there is a garbage furnace to destroy all refuse, organic matter and excrement, there will inevitably be foul smells, so that the Island, instead of being a health resort, will cease to be a place of attraction to the citizens and strangers.

Efforts are being made to have the slaughter houses placed and kept in such a condition that they may be the least possible source of danger, but the only effectual way to obtain protection of the public health is to establish a sufficient number of abattoirs.

That cow-byres are still allowed to exist within the city bounds is an indication that the public does not realize the fact that Toronto is no longer a village or small city, but a metropolis of goodly proportions, requiring corresponding conditions.

Turning to infectious and contagious diseases, in the management of which the Medical Health Department is much less handicapped, it can be recorded that substantial gain has been obtained. With regard to smallpox, not a case has occurred during the year. At the close of the previous year the disease had just been stamped out by vigorous measures. It is worthy of record, as it is a cause of gratification that the disease which had in a brief period appeared in seven different places, neither case originating from either of the others, but introduced from abroad, was effectually suppressed, and the means adopted by the department to prevent its spread ample and efficient. Even contrary to expectatious no cases have subsequently occurred.

By turning to the tabulated statements of infectious diseases reported, and of mortuary returns for the last three years, it will be seen that the number of cases of typhoid fever has increased in about the same ratio as the population, but relatively has not increased. The number of deaths from this disease has decreased, notwithstanding the increase of population, from 68, the number three years ago, to 49. The number of cases of scarlet fever reported in the same time increased from 97 to 121, which is a relative decrease considering the increase of population, while the number of deaths from this disease is one less than three years ago. But the most striking record is that relating to diphtheria. The number of cases three years ago was 625, the number two years ago was 490, and the number for last year 350.

The rate of mortality in the same period is respectively for the three years 202, 133 and 72. In this connection the following statements recently published may be quoted. The *Empire* says: "The mortuary statistics for October indicate a far healthier condition "of the large cities than has been the case for some months past, and Toronto's propor-

"tion is astonishing, being but one per thousand, as against Montreal's 2.21, Quebec "2.61, Hamilton 1.55, Ottawa 1.53, Halifax 1.29, London 1.05, Winnipeg 1.71, King- "ston 1.44, Brantford 1.42, Belleville 84, St. Thomas 1.22, Guelph 1.42, Woodstock "1.72, Windsor 1.51, Chatham 1.29." The *Mail* also vouchsafes this announcement: "The mortuary statistics for October show a general improvement in all the cities. "Ottawa's ratio per thousand was 1.53, quite a drop compared with previous months. "Montreal's figures were 2.21, Toronto the unprecedentedly low rate for a large city of "one per thousand." In view of these facts the Local Board of Health may be congratulated, while the Medical Health Department feels encouraged to continue the efforts which have in the past been made to preserve the public health.

Infectious Diseases Reported by Physicians for the last Three Years.

Month.	Typhoid Fever.			Diphtheria.			Scarlet Fever.		
	1886	1887	1888	1886	1887	1888	1886	1887	1888
November	13	18	36	77	78	46	13	9	24
December	1	17	31	59	61	71	8	12	24
	1887	1888	1889	1887	1888	1889	1887	1888	1889
January	13	10	19	50	47	47	18	9	25
February	6	10	22	57	48	37	13	7	19
March	3	9	8	42	37	34	15	16	12
April	7	6	8	55	33	19	3	8	20
May	2	10	7	53	21	19	5	10	20
June	5	2	6	36	20	16	9	15	14
July	8	5	15	34	30	12	4	10	8
August	37	23	30	41	33	6	1	1	8
September	46	77	56	60	37	15	6	9	18
October	52	64	65	61	45	28	2	11	29
Totals	193	251	303	625	490	350	97	117	221

Mortuary Returns for the last Three Years.

Month.	Typhoid Fever.			Diphtheria.			Scarlet Fever.		
	1886	1887	1888	1886	1887	1888	1886	1887	1888
November	3	3	9	15	13	4	1	....	....
December	1	7	3	17	14	12	1	2	1
	1887	1888	1889	1887	1888	1889	1887	1888	1889
January	4	1	4	19	23	20	3	....	2
February	4	3	4	12	12	11	.. .	...	....
March	5	2	6	11	14	5	1	1	....
April	2	1	1	24	8	3	....	1	1
May	5	3	1	21	4	3	1	1	1
June	6	3	....	10	8	2	....	1	....
July	1	1	1	20	10	3	....	1	1
August	5	4	4	21	10	2	....	. ..	....
September	9	13	8	17	9	4	...	....	....
October	23	9	8	15	8	3	....	....	....
Totals	68	50	49	202	133	72	7	7	6

Management of Infectious Diseases.

Month.	Number of cases reported from all sources.	Number of visits for the month.	Places visited in connect'n with contagious diseases.	Number of funerals attended.	Number of disinfections made.	Number of patients removed in ambulance.	Number paid for ambulance.
November, 1888	234	....	....	....	....	....	....
December, 1888							
January, 1889	112	....	....	....	....	8	1
February, "	78	275	....	3	4	15	1
March, "	57	353	....	2	8	3	2
April, "	47	262	30	1	10	5	3
May, "	48	226	47	....	14	3	....
June, "	37	247	35	....	10	4	1
July, "	37	172	36	1	7	2	....
August, "	43	182	42	3	2	5	2
September, "	88	320	91	1	4	6	3
October, "	124	501	123	1	10	11	5
Totals	905	2,628	404	12	69	62	30

AMBULANCE FOR INFECTIOUS DISEASES.

The ambulance, which has belonged to the Department since the 10th January, has proved to be a great advantage over the previous arrangement. All cases of infectious disease are now removed by an officer of the Department. A nominal charge of one dollar is made to such as are able to pay. When the person is unable to pay, he is removed free of charge.

HOUSE TO HOUSE INSPECTION.

This has been done almost altogether by the sanitary police, eight in number, who began work on the 8th April. The work of inspection began at the front of the city from the eastern to the western limit, and proceeded northward. It was expected that the greater portion of the city would have been traversed by the inspectors, but the very large number of complaints to be attended to prevented this, and in not more than one third of the city has house to house inspection been made. It may be well to remark that the time spent by inspectors in looking after the abominable privy pits (which is probably two-thirds of the whole time of work) which it has so often been urged should be entirely abolished, would have enabled the inspectors to visit every house in the city.

The following table exhibits the result of the house to house inspection for the year

SANITARY IMPROVEMENTS AS EFFECTED BY THE SANITARY POLICE DURING THE YEAR.

	Totals.
New water closets	366
Water closets repaired	113
New drains put in	135
Drains repaired	160
Privies cleaned	2,053
Privies repaired	117
Privies abolished	143
Dry earth closets put in	53
Yards cleaned	804
Cisterns filled	105

	Totals.
Wells filled	18
City water put in	33
New sinks put in	47
New traps put in	71
Waste pipes repaired	121
Water pipes repaired	85
Cellars drained	52
Cellars cleaned	148
Eavetroughs, etc., repaired	60
Stables cleaned	142
Slaughter houses cleaned and repaired	17

The above table shows work done in connection with the house to house inspection, and is not included in the work elsewhere given in connection with complaints.

SPECIAL INSPECTIONS DURING THE YEAR.

Milk Inspection.—Total number of inspections made, 2,563. The reports were mostly satisfactory, a few, however, had to receive further attention. Each dealer was notified "that a permit must be obtained from the Medical Health Officer, as well as a license from the inspector of licenses, and that in order to obtain the license the permit must be shown to the inspector of licenses."

Cow Byres —Total number of inspections, 554. Of these 515 were found satisfactory. The others were duly attended to.

Livery and other Stables.—Number of inspections made, 143. Of these 139 were found satisfactory. The others were treated as complaints.

Slaughter Houses.—Number of inspections, 314. Of these 283 were reported to be in a fair sanitary condition. The others received further attention.

Sausage Factories.—Total number of inspections, 112. Of these 109 were found in good condition, while the others were dealt with as complaints.

Rag and Bone Shops.—Total number of inspections 44. Of these 31 were found satisfactory. The others received the necessary attention.

Industrial Establishments.—Total number inspected, 229. Of these 208 were found satisfactory. The others received the necessary attention.

School Buildings.—The Public School buildings, 39 in number, and those of the Separate Schools, 13, were inspected in the spring, and again before the opening of the schools on the first of September, also Upper Canada College, Collegiate Institute, the Normal and Model Schools. The inspector was directed to "report as to the sanitary condition of the buildings and premises; the kind and condition of privy closets and urinals, also respecting the water supply and drainage." The reports after inspection in the spring made it necessary to call the attention of the Public School Board, as well of the Separate school, to the unsanitary condition of certain school premises. The reports of the inspections made in August were satisfactory.

Care of Infant Children.—In accordance with the "Act for the Protection of Infant Children," the premises of 19 applicants for license have been inspected by the Medical Health Officer, since the first of January. Of these, 14 were found satisfactory, and authority given to the inspector of licenses to register the same. The others not being suitable, the applications were refused.

Rosedale Creek.—This stream is in reality an open sewer until the point is reached where the new sewer is constructed. It has required a good deal of attention during the season. In the spring and again in July, the more solid material found in the stream was cleared out and buried. Disinfectants have also been used from time to time with the object of diminishing the foul emanations. The completion of this sewer as speedily as possible is imperatively demanded.

Refuse, Garbage, etc., from Hotels, Restaurants and Clubs.—In all, 114 places were inspected. Of these, 77 were found satisfactory. The others received the required attention; and in one case the proprietor had to be summoned before the police magistrate in order to secure the removal of the evil.

Privy Closets and Urinals at Hotels, Taverns and Saloons.—Inspection of 124 places showed 109 to be in a satisfactory condition. The others were dealt with as complaints

COMPLAINTS BY CITIZENS AND INSPECTORS.

The inspectors where instructed, in making house to house visits, that "when a place was found in an unsanitary state, for which the owner or agent was responsible, it was to be made a citizen's complaint, and the owner or agent at once notified on the form prepared for the purpose, and report if possible what he will do in the matter."

In like manner in making special inspections, every place found unsatisfactory was classified with citizens' complaints.

In dealing with these complaints, from whatever source, a uniform course is pursued Having ascertained who is the responsible party, whether the occupant, owner or agent, he is notified of the nature of the evil found to exist, and it is learned whether he will abate the nuisance. In many cases this is sufficient to secure removal of the evil. When there is unnecessary delay in attending to the matter, he receives a formal notice stating the nature of the complaint and what requires to be done within a specified time, or the law will be enforced. The next step, when necessary, is to issue a summons to appear before the police court for infraction of the Public Health Act.

The following is a statement of the management of complaints during the year:

Total number of complaints, about	6,000
Visits made in connection therewith	18,000
Total number of notices served	1,422
Inspections after notice had been served	5,473

CASES IN COURT DURING THE YEAR.

Number of prosecutions	234
Number of remands	581
Cases withdrawn (work done)	170
Cases dismissed	9
Fines imposed	12
Amount of fines	$54 00

RECOVERY OF COSTS FOR WORK DONE BY THE DEPARTMENT.

The Public Health Act provides that in case of serious evils existing in any place, dangerous to the public health, and it is found impossible for any reason to compel the party responsible to remove the evil, the Local Board of Health may have the necessary work done and recover costs therefor from the property in proper course of law. During the year three such cases have been dealt with by the department. In the first case judgment has been recovered against the owner for the expenses of abating said nuisances. Execution is now in the sheriff's hands, and as a sale is about to take place by a mortgagee, it is expected that the amount of the judgment will soon be realized. The other two cases are now in the hands of the city solicitor, who is proceeding against the owners of the property to recover from them the amount it cost to abate the nuisances. The total cost of abating the nuisances above mentioned is over $230.

In this connection it is proper to state that the department is under obligation to the city solicitor's staff, not only in these cases, but in many others for prompt advice in the management of police court cases.

MISCELLANEOUS WORK.

Supervision of the Cutting of Ice and its Sale.—The fact that ice of two qualities was stored by the same dealer, one quality being for consumption, the other for cooling purposes only, made the work of the inspector extremely difficult. The unscrupulous conduct of some of the dealers deserves the reprobation of the public whose health it is desired to protect. In the Monthly Report for April it was stated, "It will be necessary to "closely watch the ice wagons during the season to prevent the use of impure ice in a manner to jeopardize the health of the consumers, and an inspector will be specially detailed for that purpose." The following promise was signed by the dealers: "I, ———, do solemnly promise that the ice I take from Ashbridge's Bay shall be sold for cooling purposes only, and not to be used in any way by which the melted ice might be drank, or come in contact with food; and that I will have a printed notice upon the delivery wagon stating, 'for cooling purposes only,' to be furnished by the Medical Health Department."

Notwithstanding this promise some of them unblushingly and systematically endeavored to thwart and deceive the inspector, and to dispose of impure ice as that fit for consumption. In several cases it was necessary to notify those to whom ice was supplied, of the dangerous quality of the ice they were receiving from unscrupulous vendors. For the future it is believed the steps which have been taken will secure protection to the public with regard to the use of ice polluted with sewage and other organic matter.

Dredging of Church, Yonge and Brock Street Slips.—As was done last year, these slips were again dredged out before the hot weather arrived. From Yonge and Church Street slips a large quantity of foul semi-solid matter was taken. From Brock Street slip a considerable quantity was also taken. The dredge was at work in all 128 hours, 58½ hours at Church Street, 40½ hours at Yonge Street, and 29 hours at Brock Street. An inspector was specially detailed to supervise this work, to see that it was properly done. He reported that the work had been done in a satisfactory manner.

Removal of Night Soil.—At the beginning of spring an inspector was directed to "make inquiries and report the names and addresses of all persons engaged in cleaning privy pits, the condition of the waggons and barrels, the places were night soil is deposited, and if deodorizers are duly and properly used in each case attended to." The reports were in the main satisfactory.

The excavators have been repeatedly notified that in no case may a privy pit be only partially emptied; but from time to time this rule has been violated owing to the desire of property owners to limit the expense when called upon to attend to a full privy. The danger attending the partial removal of the contents of a privy pit has been repeatedly pointed out. It is a matter for regret, and caused a great deal of trouble to the department that the service for removal of night soil has been, and remains altogether inadequate. Orders for work have remained on their books for several weeks unattended to, while complaint after complaint was made at the office of the evil which, meanwhile, we were powerless to remove.

Closets and Urinals at Railway Stations.—An inspection of the several railway stations in the city showed three to be in an unsatisfactory condition. These were duly attended to.

Houses unfit for Human Occupation.—During the year seventeen places used as dwellings were condemned. It became necessary to take legal steps to have the occupants evicted, and in some cases they had to be summoned before the police court in order to obtain the required end.

Island Sanitation.—During the season an inspector visited the Island nearly every day of the week. A person was engaged to remove from the Island the garbage of all public places and from such private houses as placed their garbage convenient for removal. This was done twice each week. In addition to this, for a time a scavenger was employed to take the garbage from the private dwellings.

Flushing Sewers.—Complaints of foul smells from the manholes have been very frequent of late. In most cases it has been found that decomposing organic matter exists in the sewer, and that flushing was necessary. The engineer's department was at once notified of the fact, and flushing the sewers was duly made by that department. In certain parts of the city this evil is more common. It would be well if a general flushing was done systematically, especially where there is little or a sluggish flow through the sewer.

Applicants for Hospital Relief.—The total number of applicants for the year was 1,397. Of these 1,111 were admitted.

Convalescent Home.—During the year 156 applicants were admitted to this institution.

The Staff of the Medical Health Department.—As organized a year ago on the recommendation of the Medical Health Officer, have proved themselves well capable of discharging their respective duties. With little exception all have given due satisfaction, and deserve the commendation of the Board.

In concluding this annual report, I wish to refer with gratitude to the constant harmony which has subsisted between the Board and the department, and the cordiality which has been maintained between the chairman and members of the Board and their executive officer. It may be safely said that the year has been one of the most satisfactory experienced since the organization of a Local Board of Health for Toronto.

It is gratifying to state that the policemen who have been attached to the staff during the season have rendered very important service to the Department.

All of which is respectfully submitted.

WM. CANNIFF, M.D., M.R.C.S., Eng.,
Medical Health Officer.

TOWNS

BARRIE.

SECRETARY'S REPORT.

I have the honour to report that meetings of the Local Board of Health, up to August last, were frequent, regular, and well attended, the members taking a lively interest in their duties. No medical health officer was appointed, such officer being deemed unnecessary.

A few cases of diphtheria occurred, (one, at least, being fatal) also one or two cases of typhoid during the year. Otherwise the health of the town was, as usual, good.

The sanitary inspector attended closely to his duties. A few cases of nuisance were ventilated in the police court and their removal effected.

A by-law licensing and regulating milk vendors, and for the inspection of milk, at the instance of the Board, was passed by the council, and will, I have no doubt, have a beneficial effect.

A portion of the town is drained by underground tile and wood drains but no complete system of drainage exists.

The domestic water supply is chiefly obtained from wells of the shallow kind, although a large number of people are supplied from artesian wells.

Steps have been taken to meet deficiencies in this respect, and last summer Mr. Chipman, C.E., was appointed to investigate and report upon a water supply and drainage system.

All the preliminary work is now through with, and before long his report will be in the hands of the council, and in all probability before another year Barrie will be abreast of the time in the matter of drainage and sewerage.

HENRY BIRD,
Secretary.

BOWMANSVILLE.

MEDICAL HEALTH OFFICER'S REPORT.

The sanitary condition of our town is most satisfactory and gratifying.

No epidemic has visited us during the year, and only two isolated cases of typhoid fever have been reported.

We have escaped diphtheria so far, and the other zymotic diseases have not appeared in our midst.

E. C. McDOWELL, M.D.,
Medical Health Officer.

BOTHWELL.

SECRETARY'S REPORT.

The Local Board of Health beg to submit the following report:

That we find the town in a fair sanitary condition, and its inhabitants free from any infectious diseases.

The Board has received no complaints as to public nuisances in the town during the past year, or any other complaints in contravention of the Public Health Act.

GEO. MOORE,
Secretary.

BROCKVILLE.

MEDICAL HEALTH OFFICER'S REPORT.

Brockville has made noteworthy progress in all sanitary matters during the past year. As a consequence the death rate has been extremely light. In a population of something over 8,900, we have had a death rate of 109, or only about 12 in the 1,000.

Strict attention has been paid during the year to registering all cases of contagious disease. We have had of typhoid fever 23 cases and one death; diphtheria 27 cases, 3 deaths; scarlet fever 4 cases, no deaths.

Brockville, this year, has fallen into line with those cities and towns most progressive in sanitary matters in issuing licenses to dairymen, exacting in return an undertaking from them to carry out its provisions, and to immediately report any case of infectious disease occurring in their families.

During the month of August our town was honored by being selected as the meeting place for the "Association of Health Officers" and the Provincial Board of Health. Valuable papers were read, and ideas interchanged, which cannot but result in great good not only to those present, but also to the country at large. At this meeting the question of regular inspection and regulation of milk supplies was taken up, and the advisability of enforcing a uniform standard discussed. Thomas Macfarlane, F.R.C.S. Chief Dominion Analyst, giving a very instructive and practical exposition of the method adopted by him for its qualitative analysis.

Privy Pits.,—Much good work as been done by the contractor during the summer, 593 permits having been granted during the past year. The great desirability of entirely abolishing privy pits has been strongly impressed upon our Board of Health, and very recently a form of agreement was entered into between the corporation and the contractors whereby the substitution of earth closets for the old privy pits will be very extensively effected, and the by-law forbidding, under penalty, the excavating of new pits be vigorously enforced. Low as has been our death rate during the past year, I am persuaded it can be still further reduced if this prolific source of disease is abolished. To the efficient carrying out of this scheme, it is absolutely necessary that a sanitary inspector be appointed who shall devote nearly his entire time to the supervision of this work.

Drains.—Much remains to be done before we can rest content with the sanitary condition of our town. There are many other drains useful only as surface drains, which are persistently used for the carrying away of house waste from sinks, etc., and in some cases even from water closets. This refers not only to streets on the outskirts but also to streets in the centre of the town, many of which are laid with proper sewers. Repeated notices to make connection with the sewers are disregarded. These surface drains are in many cases in bad repair and are choked up, resulting in the neighbouring soil being charged with sewage; when the drains are imperfect the purity of our water supply is endangered. One death from diphtheria can be directly traced to this nuisance of surface drains, the tile, where exposed, being found completely filled with the most offensive excrementitious matter. Another surface drain carries off sewage from a large cesspool on Market street used by the Bank of Montreal. Surely in the centre of our town and with proper sewage facilities this state of things should not be.

Wells.—As soon as our system of water works becomes the property of the town I would strongly urge the advisability of closing up all wells both public and private.

A number of cases of typhoid having developed in the neighbourhood of a well, on the corner of Wall and Brock streets, I have submitted a sample of the water to the Department at Ottawa for analysis. A report on its character will shortly be given.

Public Abattoir.—I would strongly recommend the establishment of a public abattoir within the limits of the town, thereby doing away with slaughter houses which are always a nuisance and frequently a cause of disease.

HARRY E. VAUX, M.D.,
Medical Health Officer.

CHATHAM.

MEDICAL HEALTH OFFICER'S REPORT.

I have the honor to submit the annual sanitary report of the town of Chatham for the year ending November 30th.

Contagious diseases have been reported during the year as follows, viz.:

Diphtheria	45	cases.	Deaths		5
Scarlet fever	5	"	"		..
Typhoid fever	47	"	"		6

Seventeen cases of diphtheria occurred in April, the greatest in any one month of the year.

Twenty-seven cases of typhoid fever occurred in November, the greatest in any one month of the year.

The death-rate for the eleven months ending with this report was 18 in 1,000.

Measles and whooping-cough. Of these diseases a considerable number of cases were reported, but not nearly all the cases that occurred. A physician is only occasionally called to attend these cases, though he is very frequently called to treat diseases following after and consequent upon them, consequently all the cases are not reported. Some parents regard these diseases as trivial, and many have the too popular belief that children must contract them sometime. The people require more light on this subject. A large number of deaths are directly attributable to these diseases, as well as the too frequent loss of some one of the special senses.

Harmony and a desire to work together in sanitary matters has been shown by the town council, their committees and officers, and the Board of Health consequently a large amount of good sanitary work has been done, noticeably the improvements in the police court, the trapping of the uprights of drains, the abolition of open drains, and the filling up of depressions that gave lodgment to foul water.

The inspection of milk was regularly and thoroughly carried out in the early part of this year, and several milkmen were brought into court to answer to the charge of selling milk below standard. The cases were clearly proven, but prosecution failed because the by-law was found defective.

A subject for congratulation is the prospect of the completion of a good system of water works at an early date, the one thing most required by this municipality to make it one of the most healthful towns in Canada.

It is proposed to get the water from deep wells down to the rock. If water is found in sufficient quantities it will probably be of very good quality.

For several years great improvement has taken place in our methods of disposing of night soil. The old pits or holes in the ground have all been cleaned out and filled up, dry earth closets and water tight vaults taking their place. When the water works are completed, water closets will displace many of these.

The hog nuisance is still complained of. The by-law regulating the keeping of them is only operative between the months of May and October, but in our mild climate hogs are a nuisance if kept less than one hundred feet from any dwelling or street at any time during the year.

During the year by instructions of the Board a neatly printed and framed card containing the regulations of the "Health Act," concerning the duties of teachers, parents and others in cases of contagious or infectious diseases, was placed in each public and private school, college and collegiate institute in the town, thus educating all concerned in this important matter.

WM. R. HALL, M.D.,
Medical Health Officer.

COLLINGWOOD.

SECRETARY'S REPORT.

In presenting the sanitary report for the year ending the 17th of October, I have to state that the town has not suffered during the year from any serious epidemic, and has, on the whole, been rather more healthy than in previous years. The death rate has been rather less than last year. The deaths being 11½ per thousand of the estimated population of 5,500, only three of which died from contagious diseases.

I reported last year that a system of water works was projected, and I am now pleased to state that the work of putting in a very complete water service is well under way, and pure water will be within the reach of everyone before the close of the present year.

In each case of diphtheria every precaution was taken to prevent its spread, the premises being thoroughly fumigated and the house placarded according to law.

JOHN HOGG,
Secretary.

DRESDEN.

CHAIRMAN'S REPORT.

I beg to report that during the present year there has been four cases only of contagious diseases reported to the secretary. One death from typhoid fever.

I may say that everything reported by the sanitary inspector requiring attention has been attended to, and the people of the town, with but few exceptions, are beginning to realize the necessity of keeping their premises clean.

Altogether I believe the town to be in a healthy condition.

I would recommend that measures be taken at as early a date as possible for doing away with privy vaults, in order to prevent the possible contamination of our water supply.

ASA RIBBLE,
Chairman.

DUNDAS.

MEDICAL HEALTH OFFICER'S REPORT.

Since submitting to you my report of a year ago there has been no outbreak of any infectious disease becoming epidemic. The number of cases of typhoid fever has been very small. One case proved fatal. Scarlet fever has appeared frequently, but only sporadically; isolation and disinfection having been carefully attended to. The cases have been quite mild, as a rule. One child, an infant, died from the disease.

In April a form of fever, evidently due to atmospheric influences, was very prevalent in the town. It developed very suddenly during the prevalence of cold east winds following some fine weather, and there were grounds for supposing that it was associated as an effect with our proximity to the marsh. Its appearance was much more limited on the north side of the town above Park street, and more general on the opposite side.

During the summer cases of dysentery were much more common than is usual in this town, showing itself rather in adults than in children. The cases of the ordinary diarrhœa of children were decidedly less numerous than the average of such cases for this place would lead us to expect.

I must again refer to the fact that the water supply of the town is still obtained from wells for the most part, and so long as this condition of things obtains we must regard our conditions of life, from a hygienic standpoint, as unsatisfactory. It is to be regretted that the town water is not more generally used for domestic purposes. Whether or not any number of the people of the town have a suspicion that the present supply of water might be easily exhausted, and are therefore unwilling to go to the expense of

putting in water services, I do not know, but there is no doubt that the risk of loss and the danger from disease is made much greater by drinking water from the wells in the town than it would be if the water from the reservoir were used.

In all other respects the sanitary condition of the town, in so far as it is controllable, may be considered good.

JAMES ROSS, M.D.,
Medical Health Officer.

GALT.

MEDICAL HEALTH OFFICER'S REPORT.

In making my annual report for the year now ending, I feel that all our citizens should rejoice at the good health that has prevailed during the year. Compared with other towns of similar size our death rate has been far below any of them that appear in the mortuary statistical report. I do not mean to say this is due to the energetic efforts of the Board, as we fortunately have been called to do very little, but rather due to the cleanliness of the inhabitants and the situation of the town, where nature has done so much by natural drainage, thereby carrying off many of the impurities and causes of diseases. During the year we have had a few cases of the various contagious diseases, but from the very low death rate, as the following table shews, is sufficient evidence of their mild character:—

Typhoid fever	5 cases.	Deaths	1
Scarlet "	11 "	"	...
Diphtheria	2 "	"	..

You will thus see how few deaths, and might say few cases of contagious diseases, have occurred in the town. At this point it occurs to me to ask whether our Board should take any action in regard to the establishment of water works when we have such a good report to present. If we look at other towns on all sides of us with their sewerage systems and water works, and still not able to show as low a mortality as the town of Galt, we should consider well before making any change, being sure the supply of water will be better than at present. However I will leave that in your hands to make such report to the council as you may see fit.

G. P. SYLVESTER, M.D.,
Medical Health Officer.

GODERICH.

MEDICAL HEALTH OFFICER'S REPORT.

During the year the town has been remarkably free from epidemics. We have lately had ten cases of diphtheria confined to two families; one family having three cases, with one death; the other seven cases, with three deaths. The proper means were adopted to prevent the spread of the disease. In one of the cases I have no doubt the disease was caused by using water from a well that had neither been cleaned out, nor used for three years.

Our sanitary condition at present is very good.

ALEX. TAYLOR, M.D.,
Medical Health Officer.

HARRISTON.

MEDICAL HEALTH OFFICER'S REPORT.

For the earlier part of the year I have nothing special to report, good health prevailing generally in the town. About the 1st December diphtheria of a severe type made its appearance in one family; but by a judicious use of disinfectants and isolation of the family as much as possible and the carrying out of strict sanitary arrangement we have so far been able to prevent the spread of the disease. There have been no deaths and the third and last child is now about convalescent. It is difficult to account for the cause in this case, as all the surroundings are good. There have been a few cases of typho-malarial fever but no deaths have occurred. In a general way the sanitary condition of the town is fairly good: but I am of the opinion if more dry earth closets were in use and the inhabitants attended regularly and strictly to cleaning their wells, we would not be troubled very much with contagious and infectious diseases. No general system of vaccination has been adopted here for the last four years, consequently a great number of children attending the Public Schools are unprotected against an attack of smallpox. I would suggest to our school board that no pupil be admitted to the school without furnishing proof of successful vaccination.

S. M. HENRY, M.D.,
Medical Health Officer.

LINDSAY.

CHAIRMAN'S REPORT.

I beg to hand you herewith the annual report of the Medical Health Officer and Sanitary Inspector, and in doing so have to call your attention to the fact that from the beginning of the present year the duties of Medical Health Officer were performed by Dr. Poole, during the serious illness of our Medical Health Officer Dr. Coulter. Dr. Poole performed his duties so thoroughly that the work of the local board of health was made light, pleasant and agreeable. On resuming his duties the same remarks will apply to Dr. Coulter. This gentleman is now away for the restoration of his health, and his partner Dr. Clarke, performs the duties appertaining to the public health. Our inspector has also faithfully attended to his, at times, onerous and uninviting duties.

It is a source of pleasure to me to have to report that the public health of the town of Lindsay during 1889 has been unprecedently good. Only three cases of scarlatina of a mild type have been reported by the resident practitioners, all in one house and in one family, and only one placard put up.

The number of deaths from all causes during the year is 53, thereby exhibiting a rate of 9 on the thousand or of 9-10 of one per cent. on the entire population.

I have strongly to recommend that the council grant the sum of $9 for the purpose of obtaining from the Government analyst at Ottawa a set of apparatus for testing the milk supply of the town—the mode of test is simple and will be of great benefit to the public.

I have again to call the attention of the council to the unsanitary state of the drain on Lindsay street, which has been for some time turned into a common sewer—owing to the unusually large rainfall during the summer. This drain has not produced any very serious illness; but during the fall the odors arising from it have been a source of annoyance and complaint from the residents in its vicinity, and those who have to travel over it. As the improvement of the sewer and abatement of the nuisance is under the consideration of the council, I don't deem it expedient to further refer to the existing evil.

The dumping ground sometime since purchased for the reception of offensive deposits has been closed up owing to the fact that the land is unsuited for the purpose for which it was intended.

As the matters which principally occupied the attention of the Local Board during the year are referred to by the inspector very fully, and as the local committees of the board have been very careful in investigating complaints, and promptly seeing to the abatement of nuisances, my duties have been very light and of a trifling nature.

J. DEACON,
Chairman.

MILTON.

CHAIRMAN'S REPORT.

The Board held five meetings during the year and are pleased to report that their labors were comparatively light, few formal complaints being made upon which they were called to adjudicate, as the timely removal of anything likely to prove injurious was attended to in the early part of the year.

The Board has given notice to the proprietors of the two slaughter houses within the town (mentioned in last year's report) and also of a cow byre to have the same removed by the first day of May next.

In the matter of the drainage of refuse liquor from the tannery into the creek running through the town, the Board has requested the proprietor of said tannery to take such steps as will prevent the same.

The Board having no medical health officer cannot present any statement which they would consider complete in respect of the number of cases of disease considered to be contagious, but have compiled the following from the returns of deaths made to the clerk of the municipality, and from interviewing resident medical practitioners: Typhoid fever and typho-malaria, twelve cases, two only of those proving fatal by complication with other diseases setting in. Scarlet fever and scarlatina four cases, none fatal. And we are pleased to report that there were no case of either diphtheria, measles or whooping-cough in the town known to the physicians or to the Board.

SAMUEL DIAL,
Chairman.

MEAFORD.

MEDICAL HEALTH OFFICER'S REPORT.

During the early part of the year the public health in this municipality was good. During the latter part of the year, however, and especially during the heated term of the latter part of July, the month of August, and the early part of September diarrhœa tending to be dysenteric in form was prevalent, especially among children.

Three cases of diphtheria were reported during the year, they existed at the same time one in the same house. The disease did not spread any further. One case of scarlet fever was reported; but the patient being properly isolated, a notice placed on the house, and proper means of disinfection used no extension of the disease took place.

A number of cases of continued fever of the remitting type have occurred during the latter part of the summer. No deaths from this cause were reported.

In regard to the cases of diphtheria and the case of scarlet fever there is reason to believe that the cause was brought from elsewhere and was not local.

In regard to the case of fever and diarrhœa the Board held a different view and was disposed to attribute a causative agency to the pit closets which exist in considerable numbers in the town. Believing such causes to be sources of contamination of the water supply the Board caused notices to be printed and distributed to the property owners, or their agents, on whose property such objectionable closets existed to have the same cleaned out, disinfected and the pits filled up with earth, and water-tight boxes substituted for the pits. The aforesaid boxes being designed to receive the excreta and also to serve as a receptacle for the ashes resulting ftom the consumption of wood or coal in the stoves. The ashes serve to absorb the liquid portion of the excrement and act as a deodorizer.

Directions regarding the mode of construction of these box closets were furnished to the parties concerned by the sanitary inspector who distributed the notices. In case of neglect or refusal on the part of any to attend to their closets according to the notices and directions of the inspector, the Board intends to order (through their sanitary inspector) the improvements to be made and the expenses of the same to be charged to the persons, on whose premises the nuisances exist, as the law directs.

Reports in the matter of drains, ditches, stagnant water, marshes, etc., have been received and dealt with by the Board from time to time.

An analysis of the water from certain wells in the town furnished evidence which justified the Board in taking action in the matter of the pit closets.

C. F. SNELGROVE, M.D.,
Medical Health Officer.

NIAGARA FALLS, TOWN.

SECRETARY'S REPORT.

The town has been free from epidemic diseases and the public health good.

The town has now the benefit of several sewers which were put in, in 1888 and 1889.

J. ROBINSON,
Secretary.

NAPANEE.

SECRETARY'S REPORT.

At the first meeting of the Board after its appointment, it was arranged that monthly meetings would be held, and suggested that greater vigilance be observed in enforcing the provisions and authority of the Act. The Board met several times during the year, as often as the necessities of the sanitary condition of the municipality demanded its attention and consideration. In a few instances only were complaints lodged respecting the existence of places in a dangerous sanitary condition, which were promptly attended to, and the cause of the nuisance immediately removed and abated.

At a meeting in the month of April, the usual notices were ordered to be printed and distributed throughout the municipality, requiring all yards, streets, lanes, stables, etc., to be thoroughly cleaned and disinfected and put in a proper sanitary condition, and

the removal of all filth and other matter dangerous to the public health, on or before the tenth day of May, which intimations were well observed and carried out under the directions and vigilance of an efficient sanitary inspector. The Board has cause for gratitude because of the absence of epidemics during the year and for the generally healthy state of the municipality.

Two cases each of diphtheria and scarlet fever were reported, all of which were returned as convalescent.

The record, however, shows the usual average yearly death rate.

PHILIP EMBURY.
Secretary.

OAKVILLE.

SECRETARY'S REPORT.

During the past year the general health of the inhabitants has been very good, very little sickness having prevailed, none of an infectious or contagious character.

The best efforts of this Board have been exacted through their efficient inspector, to prevent the accumulation of garbage of any description upon private property in the town, and also upon the highway and public places, and where any such accumulation has taken place it has been promptly removed.

There has been some additions made to our system of sewerage, but the Board regrets to say, that it is still very far from perfect, but it is hoped that by gradually adding to the same, it will, at no very distant day, be all that will be necessary.

An agitation is now on hand for a construction of a system of water works in the town, and this Board expresses the hope that such works may be constructed, as they feel assured that they would remove the cause of much of the sickness which occurs, by providing water from lake Ontario and avoiding the use of water from wells which, undoubtedly, is more or less contaminated by sewage and other obnoxious percolation.

R. BALMER,
Secretary.

OWEN SOUND.

MEDICAL HEALTH OFFICER'S REPORT.

In presenting the annual report for the year 1889, I have pleasure in reporting much improvement in the general sanitary condition of this locality—true, much remains yet to be done. Many nuisances of a disagreeable kind have been arranged without much difficulty, and the two which have demanded the greatest amount of attention, are lot one on Bay street, which has at last been remedied by connection with the Bay street sewer, and that portion of Baker street between Murdoch and Boyd street which has also been remedied by filling up the overflowed lots and connecting the buildings with the Baker street sewer. Another serious nuisance which is still unremedied, exists where the Division street sewer empties north of the swing bridge. In May last this matter was reported to the town council, recommending that the mouth of the sewer be continued to deep water, thereby covering a very offensive spot.

I trust that at no distant date this change will be made, as it will produce a very pleasing change upon the olfactory nerves as well as on the organs of vision of those passing so public a place.

During the year permits have been granted for the construction of sewers on the following streets, viz:—Bay, Peel, Boyd and Scope streets. An application for a sewer on Poulette street, between Campbell and Dease streets could not be acceded to, as the pipe would convey the sewage to the still water of the dam, the same sewer might be rendered available by reversing the direction of the flow from Dease to Campbell street and thence into the river.

It is to be hoped that something may be done with the drainage of some parts of the town on the west side of the river, more particularly Mulholland, Terrace and Beech streets, which are being rapidly built up with no alternative but draining into the ditches. The land is low and the subsoil wet. Many of the cellars have standing water all year.

The system of sewerage adopted here has in the meantime proved very beneficial. Typhoid fever, which at one time threatened to be a regular and serious visitor, has now almost disappeared. During the summer occasional tests were made of the milk offered for sale. It is gratifying to know that all samples examined reached a very fair average.

I would again call your attention to the constant source of danger which continually menaces the population in the privy vault. This antiquated system should be done away with and in its stead the drawer or pail system, with dry earth adopted. The first change would cost little and the yearly cost, if the system were it generally adopted, would be a trifle compared with the present expense.

During the summer there existed two or three sporadic cases of diphtheria. Complete isolation and disinfection preventing any further spread. In October the disease assumed an epidemic form, making its appearance simultaneously on Mulholland, Bury, Melville, Hill and another street, name unknown. Attention was first called to the serious nature of the malady from the death of a child in the house on Mulholland street on the 21st of October, and the report that the most of the family were prostrate with the disease in a very serious and dangerous form.

On the same day I received peremptory instructions to enquire into the nature and correctness of the report, and if it were correct to use every endeavour to arrest the progress of the disease. In the house I found one dead, one dying and four in bed with the disease. Strict measures were at once taken to isolate the house, visiting was also stopped, and placards as soon as possible were placed upon all the infected houses, five in all. At present writing four of these placards have been removed through recovery of the patients, two by authority of the Board of Health and two without any authority.

In one instance the family have not entirely recovered.

It is a matter of congratulation that so far the epidemic appears to be arrested, as there are no new cases to report outside of those houses already reported.

ALLAN CAMERON, M.D.,
Medical Health Officer.

PETERBORO'

MEDICAL HEALTH OFFICER'S REPORT.

The present year has been notable for the almost perfect freedom of the town from infectious disease, a single death only, and that from diphtheria which originated elsewhere, being the total mortality from this cause. A very few mild cases of typhoid and scarlet fever have been reported, but none have been fatal, something unusual in a town as large as this, throughout a whole year. In no case has any disease spread, the attack being limited to the house in which it broke out, and, as a rule, to one member of the family. Even the deaths among children during the summer months from diarrhœal affections were hardly worth mentioning. The proportion of ordinary or non-infectious illness has also been extremely low. Last year I showed how the death rate had decreased

in four years from 18½ to 16 per thousand, and expressed the hope that it might remain at that. This year the record is broken more than ever before. Last year with a population of 8,989 there were 157 deaths. This year with a population of 9,302 there were only 118 deaths. In other words the death rate has been reduced to a shade above 12½ per thousand. This is a remarkable showing and merits the attention of manufacturers and others desiring good locations. Such an uncommonly low death rate, however, is exceptional, and a few words may be said about it. There is a general impression that a certain amount of disease must occur whether times be good or bad, but any medical man knows that the proportion is less, other things being equal, in periods of financial depression. It is not that people consult a physician less readily, but the sum total of illness is actually less. Greater abstemiousness in living, the avoidance of excesses in eating and drinking are part of the cause. Rich food and frequent late suppers induce a plethora of the system which predisposes to disease. Then in busy times the wear and tear of money making, the rush and hurry of life, reduce nervous strength, bring on fatigue, and thus render the constitution less capable of resisting attack. Thus dull times, through a financial misfortune, are often a physical blessing. A bow string must sometimes be relaxed in order to preserve its tone, and the human system follows the same law. Still sanitary work must have had a great share in producing this result. Tons and tons of garbage and refuse that were formerly allowed to remain festering and polluting both air and water, are now carted away every year. Isolation and disinfection have done their work. Besides, there is a vast and unmeasured benefit in the value of sanitary precautions being brought before each individual, and the constantly growing feeling that these matters of the hightest importance, and in the care which is the practical outcome of this feeling.

The following are some of the points on which your officers' attention has been engaged during the year :—

Slaughter Houses.—When the first Board of Health was inaugurated it was determined that all the slaughter houses should be removed outside the municipality at the earliest possible moment, and that no others be allowed to begin operations. The number has gradually been reduced to three, which have been allowed to continue so long as they were kept in good sanitary condition. Recently another has started without obtaining permission of the Board, but at the request of the town council proceedings have been stayed until March 1st, when, if not removed, action will be taken. No further permits are to be granted. Inspections of the slaughter houses have been frequently made during the summer ; although the wet season has made it more difficult to keep things in order, a fair condition has been maintained.

Removal of Garbage, etc.—This has been carried out more systematically and to a greater extent than ever before. Complaints are sometimes made regarding the unpleasant odor noticed here and there on sultry summer evenings, and it assumed that very little cleaning up is done in the vicinity. This is often a mistake, as it arises from the adjacent ground which has been saturated for years. The contents of a vault may be removed and yet the surrounding soil give off disagreeable emanations. The remedy is disinfection, frequent and thorough. A few pounds of green vitrol or chloride of lime will work wonders. I called the attention of the public to the necessity for this particularly in August and September, which are the breeding months of autumnal fever. I will do so again, as nothing is more important.

Earth Closets.—Whenever it has been thought advisable, earth-closets have been recommended as substitutes for privy-vaults. But in all cases it is not advisable. Abominations as vaults certainly are, earth-closets become much greater abominations if not properly attended to, as has been disclosed more than once lately. When tenants are coming and going, and where removal of excreta means expense, earth-closets can be kept in good condition only by means of a scavenger employed by the town. Such an official, whose services could be obtained at any time, without direct cost, would do more to ensure cleanliness than any other arrangement that could be devised.

Sewerage.—The question of sewerage is always important, but in view of the increased good health of the town and the investigations that are being made in various

places as to the best mode of treating sewerage, the town council are wisely exercising caution. Electricity is being brought into use for this purpose, and there is also a war between different systems of chemicals, hence it is better to wait patiently and see which wins, than to plunge into a large expenditure without definite and accurate information. Last summer I saw the separate system in operation at Brockville, and everyone seemed pleased with it, but the difference between the Otonabee and the St. Lawrence might necessitate some modification here.

Pollution of Streams.—As it has been rumored that there is contamination by manufacturers and others of the river above the source of water supply, your officers intend to examine carefully both banks of the river between that and Lakefield, and, if necessary, inform the Provincial Board. Now that the season is so far advanced this will be impracticable before spring, but the earliest opportunity will be taken, and the results communicated to you. Regarding the creek which passes through the town, I am glad to say that some of the larger manufacturers are discontinuing the pollution of it from closets, and we expect to get householders and others to follow.

Inspections.—House to house inspections have been made by the sanitary inspectors in the intervals of their other duties. In this way a large part of the town has been gone over, larger than in any previous year, the central portions of course receiving the lion's share. In spite of the wet weather, yards and premises have been better kept this year than usual.

Complaints.—A large number of complaints have been sent in throughout the year, but in most cases the grievances have been rectified by a simple notice to the offenders. In a few cases proceedings were necessary, which, it is to be hoped, will have a salutary effect in the future.

Well Water.—I have analysed nearly a hundred specimens sent in during the present year, and found them of all degrees of impurity. The most frequent cause is a neglect to clean the well in spring. Some persons have told me that their wells had not been cleaned for ten or fifteen years. It should be remembered that the by-law requires all wells that are in use in the municipality to be cleaned out before the 1st day of July in each year.

Milk Supply.—No complaints have been made as to impure milk being sold, and hence it may be assumed that our supply is above the average in quality.

Infectious Diseases.—These have been pretty faithfully reported by medical men, there having been throughout the year five cases of diphtheria, seven of scarlet fever and three of typhoid. I have informed the librarian of the Mechanics' Institute so that books might not be distributed to affected families, but it will be better to have some blanks printed for that purpose.

There is an important point to be attended to in connection with this. Should scarlet fever occur in a family who have at the time books from the institute in the house, these may be sent back swarming with germs, and spread the disease far and near. Some means will therefore have to be found of disinfecting the books in such cases.

J. CLARKE, M.D.,
Medical Health Officer.

PERTH.

MEDICAL HEALTH OFFICER'S REPORT.

Typhoid fever has prevailed to a considerable extent during the fall, a few cases have been very severe and of a very low type, but the mortality has been very small compared with the visitation of last year. Disinfection and better sanitary regulations

generally, have been attended to, which may, in part, account for the mildness of type. One of the fruitful sources of this as well as other preventable diseases, is the custom of throwing slops in the backyard, polluting the soil, and when the proper atmospheric condition presents itself, innumerable bacteria are liberated, to be inhaled by the unfortunate victims of their own carelessness.

Two things ought to be done to prevent this: (1) provide drainage for the liquid refuse, and (2) and some suitable system for collecting and cremating the solid portions. Until this is done kitchen garbage will occupy a front place in the ranks of the varied elements that go to make up disease.

The necessity for a wholesome supply of water for domestic purposes still exists, and the solution of the vexed problem seems to be as far off as ever. This once secured, together with a trunk sewer by means of which a comprehensive system of drainage could be brought about, our town would occupy a prominent place in a sanitary point of view.

Before concluding this report I would like to draw the attention of our Board to the necessity of urging upon the different refiners the necessity of introducing such measures as will result in the burning of the gas that is now escaping into the atmosphere, and constituting a nuisance of the first water. It is detrimental to health, unpleasant to the sense of smell, and detracts from the attractiveness of the town. It can be easily remedied, and I trust our Board will agitate the matter until the desired end is accomplished.

G. D. LOUGHEED, M.D.,
Medical Health Officer.

PICTON.

MEDICAL HEALTH OFFICER'S REPORT.

This report will show that the present year has been an exceptional one, in its freedom from sickness, and the absence of any epidemic calculated to alarm our people. Four cases of diphtheria of mild type have been reported to me, all of which recovered. Typhoid fever has been somewhat prevalent, but this also has been of a remarkably mild type. One death only has been brought to my notice. Malaria has been very active, probably from the low state of the waters in the bay and marsh, but has in all cases succumbed to an antiperiodic and antiseptic treatment.

The Health Officer has the pleasure to report the good feeling that exists between the officer and the inhabitants, in no case has it been necessary to appeal to the law to aid us in enforcing sanitary reform—the people recognize that it is for their good, and act in unison with the officers to promote sanitation—what a difference to what they submitted years gone by.

It is impossible to estimate the good effect of pure milk as a diet for infants and invalids, but on the other hand death is often in the pot of this elegant and nutritious liquid. Nothing absorbs noxious and poisonous elements so quickly as milk—it may produce scarlet fever, diphtheria and typhoid fever in alarming proportions, just as in an opposite ratio, it feeds and nourishes the new born infant, and the octogenarian tottering to the grave. How are we to know the difference? asks the alarmed public. Science, investigation and prevention must come to your aid, to defend yourself and children from these unsuspected dangers. The sickness and deaths in an entire hamlet, and in city houses supplied with a certain milk have been traced to our unclean stables, to impure water, and to diseased cows. The easiest way of adulterating milk is by the addition of water, the water may be impure and convey its impurities to the milk in an alarming degree. I would suggest to our council to impose a license of 25 cents a year.

and so place the vendors of milk under the regulations of the council and board of trade, and give the health officer the right to enter all cow byres, and test the quality of the milk at his option. I would suggest also that the health officer be empowered to analyze all food and drinks offered for sale, in conjunction with his other duties. The wonderful discoveries which have lately been made in pathology, show that most diseases have a distinct origin from some of the many forms of bacteria that infest our persons and dwellings, and show that cleanliness and attention to our sanitary surroundings will ward off many diseases, which would otherwise prove fatal. As we are now to have an efficient system of water-works I would suggest that a hydrant should be placed at the west end of the drain that runs through the town so that it could be flushed frequently during the heated term.

HENRY B. EVANS, M.D.,
Medical Health Officer.

PORT HOPE.

MEDICAL HEALTH OFFICER'S REPORT.

I beg to present you with a report of the health and sanitary condition of our town for the year 1889. In regard to the general health, we have been unusually free from the diseases incident to the summer; such as cholera infantum, etc., and we have every reason to congratulate ourselves upon the state of our good health.

In regard to infectious and contagious diseases, we had but two cases, both diphtheria, one an imported case from Mill Brook, it is said, was fatal. The other was of a very mild type. The result proves that all requirements of prudence and good judgment in isolation, disinfection, etc., were carried out. Seeing that they were not followed by any more cases.

D. B. POWERS, M.D.,
Medical Health Officer.

PORT ARTHUR.

MEDICAL HEALTH OFFICER'S REPORT.

The year 1889 has been one of epidemics, early in January chicken-pox made its appearance, and before it had been stamped out whooping cough was reported, and cases occurred in almost every house in town where there were young children. By the time the last "whoop" had been heard measles came to stay, and became, if possible, more general than the whooping cough had been. So many children were ill with measles that the public schools had to be closed three weeks in October. In both latter named diseases it did not appear to be known that it was the duty of householders to report infectious diseases, when it was not deemed necessary to call in a doctor, and that moreover it was their business (the physicians') to do so at any rate. The closing of the schools showed the necessity of so reporting; and should another epidemic occur we shall doubtless manage things better than was done regarding any of this year's epidemics. From cases reported, and those discovered which had not been reported, there must have been about 300 cases of whooping cough and at least 350 cases of measles.

We had some cases of diphtheria and scarlet fever during the year, but these diseases never became epidemic. We had merely a stray case occasionally, and I cannot recall an instance where we did not then, or afterwards locate, the cause, when, of course, the evil was rectified. With the experience of the past three years before me, I do not see why we should ever necessarily have a case of diphtheria.

Several cases of typhoid fever were treated in the hospital, but none of the parties belonged to the town or contracted the disease here. Several persons in one house had typhoid fever, but no other cases have been known or reported.

It is satisfactory to be able to state that none of those diseases has been deadly in their effects. Four children have died this year from measles or its sequel, two from scarlet fever, and only one from whooping cough. There were no fatalities from diphtheria. There was a considerable amount of summer complaint among infants; but only two deaths were reported. This may be accepted as correct, for the authorities are very strict in seeing that the registration of deaths is properly observed by the public.

The death rate has been unusually large; more than double that of last year. It is hard to say just how this is, because, as before stated, none of the epidemics have been deadly in their effects.

Chronic heart disease, however, has claimed an unusual number of victims, two of whom were young women; the number of deaths from this cause amounts to about nine per cent. of the whole mortality.

A very large number of complaints have been reported and looked into during the past year; and though, perhaps, all has not been done by the Board of Health that some people expect of it, a large amount of really good work has been done and several chronic nuisances have been abolished. With more hearty co-operation and moral support from the towns people generally, the Board of Health for 1890 should have no difficulty in placing the town in first-class sanitary condition; and in removing the remaining blots on its character for cleanliness. In this connection it may be stated that as many sanitary improvements may be impeded by the operations of the Frontage Act, under which the town groans, some additional power should be given Boards of Health to enable them to carry out necessary improvements, such as the construction of drains and sewers, when the cupidity of owners of property fronting on the streets requiring such improvements renders futile the efforts of the Board to improve the sanitary condition of the town.

THOS. S. T. SMELLIE, M.D.,
Medical Health Officer.

SIMCOE.

SECRETARY'S REPORT.

The Board of Health have the honour to report that early in the spring they took the necessary steps to have notices given to the residents of the town by the health inspector, to clean up their premises and remove these from all accumulation of animal or vegetable matter that might prove injurious to the public health, and the health inspector reported a ready compliance with the requirements of the Board.

The Board further reports that the general health of the town during the current year has been highly satisfactory, there being no prevailing epidemic or any contagious diseases, except the one case of diphtheria mentioned in the report of the Medical Health Officer, which case the Board took prompt measures to isolate, and, at a trifling cost, prevent danger from further spreading.

On complaints from residents living near the canning factory the Board directed their attention to the removal of the offensive smell arising therefrom, and, on examination, they directed Mr. Innis, the manager, to abate the nuisance, which he promptly did, and no further complaints were made.

N. C. FORD,
Secretary.

STRATHROY.

MEDICAL HEALTH OFFCER'S REPORT.

In accordance with my duty as Medical Health Officer, I beg leave to lay before you as concisely, at the same time as correctly as possible, a statement of my observations during the past year. I have to congratulate the town council in the selection of a very efficient Board of Health, who have done very much useful work for the benefit of the public health. At the same time I would urge the necessity of further extending the usefulness of the Board to a careful and systematic study of sanitary science, school hygiene, and all matters pertaining to the benefit of the public health, and to a rigid enforcement of the Health Act, which, if thoroughly carried out, will render invaluable service to the health of the community at large. There are still many places in our midst that are low and improperly drained, one cesspool opposite the Albion hotel in particular needs remedying in some way, as at times it gives off a very offensive odor. I must admit, however, that in all cases where it was possible, under ordinary circumstances to improve the condition of affairs, the authority of this Board has been duly recognized, and the order of the sanitary inspector in most cases observed. With regard to the disposal of excreta, garbage and other unhealthy material, I must say that the requirements of the Act have, through the vigilance and energy of the sanitary inspector, been most satisfactorily carried out. The effects of their non-removal completely before they can decompose is pretty generally known, still it might not be amiss to state a few of them in order that the requirements of the Act may be more readily complied with. During decomposition they evolve quantities of noxious gases, low organisms are given off and amongst them the germs of disease. Most of what are termed zymotic diseases, such as diphtheria, typhoid fever, etc., are propagated in this way. The soil also, particularly in the vicinity of water closets and other outhouses, becomes saturated and gives off in consequence germs laden with impurities. The filth carried into wells from the surface and through the soil is the cause of a large amount of typhoid fever, diphtheria and other diseases that occur in our midst. Two of the worst cases of typhoid fever that I have had this year were due entirely to that cause, so that it is clear to observe that the timely removal of all such poisonous material to a place whereby their subsequent presence they can do no harm, is of the utmost importance.

We have had quite a number of cases of typho-malarial fever in this place during the year, the majority of them breaking up in from 10 to 14 days. Of the pure typhoid type, so far as I can learn, there have been about 20 to 25 cases, and only four deaths, and the latter were more or less complicated with other diseases, had not very good nursing, and in some cases the dieting was very imperfect. There were very few cases of scarlet fever or diphtheria, and only one case reported fatal. I would still urge, as in a previous report, the advisability of securing a building that could be used as an hospital where those affected with contagious diseases, and not having proper conveniences for care and attendance, could be removed, and by having a competent nurse, many lives might be saved, and the head of the family could then follow his usual employment. The sanitary inspector made a house to house inspection during the season, and reports the number of closets cleaned and deodorized as 609, about the same number of yards cleaned of refuse, one well filled up and others cleaned out. All the slaughter houses were in good condition. Several of the cesspools were disinfected, and that he has since made a monthly inspection of the yards and reports all now in a fairly satisfactory sanitary condition.

G. HENDERSON, M.D.,
Medical Health Officer.

SEAFORTH.

SECRETARY'S REPORT.

The general state of the health of the town has been good. In two instances we have got nusiances removed which have been of some years standing. Public opinion is gradually, though slowly, awaking up to the connection there exists between cleanliness of surroundings and health. Some parties have offered pretty strong objections to having their houses placarded in cases of infectious diseases.

WM. ELLIOTT,
Secretary.

ST. MARY'S.

MEDICAL HEALTH OFFICER'S REPORT.

I beg leave to state that during the year ending 15th November, there were reported to the secretary three cases of typhoid fever and seven cases of scarlet fever, all of which recovered. There were also reported five cases of diphtheria, four of which recovered, and one death.

The town during the past year has been very healthy, as there have been but nineteen deaths in it up to the date of our report. As our population is about 3,700, that makes our mortality very low, and the town might very justly be classified as one of the healthiest in the whole province.

A town having such excellent water emanating from so many flowing wells and never-failing springs, and having such good natural drainage will of necessity be a healthy one, unless its inhabitants do something to interfere with the course of nature.

I am pleased to be able to state that the trustees of the public schools, during the past summer, discharged their duties fully so far as putting the different rooms of the schools in a good sanitary condition. The floors, wood work, walls, ceilings were all thoroughly cleaned and disinfected. All the outhouses were also cleaned out and thoroughly disinfected. So long as the privy pit is used this ought to be done every year, for the expense and trouble in connection with it are mere ciphers in comparison with the benefits and advantages the children derive from all the surroundings of the school being in a state of perfect cleanliness.

The inspector made his usual rounds last spring and doubtless did good work.

Our people are gradually becoming more and more alive to the importance of having a general cleaning up, once a year at least; but in country schools as in some others the progress of some persons is remarkably slow.

I regret to observe that the sewer nuisanoe has still an existence, and that a number of our citizens complained of it during the past summer. As I entered into that subject very fully in my report of 1887, it is wholly unnecessary to state much more about it now—the views I expressed then are my views at the present time, and the importance of attending to it is unquestionable.

A new industry has been begun in the west ward, on Thomas street, which doubtless will require the attention of the Board during the coming summer if not before that time. It is the opening up of a quarry where the excavation for stone is lower than the bed of the river Thames, the consequence is that stagnant water has been there during a portion of last summer, and parties living in the vicinity of it have complained of the disagreeable odor arising from it. It is proper to remark here that one of the three cases reported of typhoid fever was close to this quarry, the other two were very near the mouth of the sewer, not more than a few rods from it.

In this connection I may state that in a former report I directed the attention of the board to a similar excavation on the south side of the "Old Lock-up" school in the south ward; but up to the present time nothing has been done in the way of putting it in a good sanitary condition.

JOHN SINCLAIR, M.D.,
Medical Health Officer.

TRENTON.

MEDICAL HEALTH OFFICER'S REPORT.

The early part of the year was signalised by a severe outbreak of diphtheria, which by strict quarantine was happily confined to three families. These with about an equal number from the neighboring township of Murray, equally well guarded by its Local Board of Health, ended the attack. The first case was peculiar in its advent. A domestic servant in a town twenty miles distant had contracted diphtheria, and the children of the household to avoid the contagion were sent to visit here till it was thought safe for them to return. Some days after the visitors had left the host's child, and subsequently the whole family, were stricken with diphtheria, with a fatal result to all except the mother and youngest child. This shows how much care should be exercised to prevent the spread of this and similarly infectious diseases.

In other respects the health of the town has been good, though this can scarcely be said to be due to a united effort to promote sanitary measures. We are, with the exception of a few drains, absolutely without sewers, and with little water for domestic use except that from more or less suspicious wells. This question of sewerage and water supply was alluded to in my last report, when the hope was expressed that some steps would be taken to enquire into the systems most suitable for our needs. Nothing, however, has been attempted in this direction.

The application of a few citizens to the municipal council to relieve their cellars from stagnant water which renders their dwellings dangerous to health, may serve to awaken interest in this matter, and lead to the adoption of a comprehensive scheme for securing a system of sewerage, water and light, in connection with our newly created water power, enough of which should be retained for the municipality's own requirements. I trust our Board of Health may press the case on the attention of the council.

The sanitary inspector has been actively engaged since May 1st in house to house inspection, and, as usual, found yards, stables and styes in many parts of the town in a filthy condition. Forty or fifty of these were reported and dealt with. The water from suspected wells was brought for analysis, and a number condemned as unfit for use. The inspector fears that the contents of closets are not properly removed when cleaned, as the deposits at the nuisance ground is too meagre. It is feared that much of the night-soil is buried on the premises to be got out of sight. The matter will be more closely watched in future. The bread, meat and market produce offered for sale have been faithfully inspected, and little cause of complaint exists in regard to these articles. In last report I advised the purchase of a horse for scavenging. The inspector returns to the subject this year, and complains of the state of the rear of stores and streets from the the presence of sweepings and loose paper, which not only distigure the premises, but on windy days frighten horses and render the danger from fires greater than if confined in boxes and removed twice a week. The horse could be used for this purpose, and when idle could be probably employed by the street committee. Nothing has been done towards the purchase or erection of an isolation hospital, though this has been part of the burden of my report for the past two years. In time of peace prepare for war. It will be both expensive and inconvenient to provide a suitable place on the spur of necessity.

The veterinary surgeon of the Board has furnished an exhaustive report on the health, housing, feeding, etc., of the cattle in all the dairies supplying milk to the town. Nineteen dairies are reported. The points of objection are that in a few cases the well is too near the byre and the drainage imperfect, while the milk is kept in cellars, vacant rooms, etc. A separate milkhouse, with proper means for storing and cooling the milk, will be insisted on. The milk itself was better up to the standard than last year.

The mortality is this year higher than last, though the ratio of births to deaths is also higher. As a sign of prosperity the marriages are also greater in number.

CHARLES McLELLAN, M.D.,
Medical Health Officer

WEST TORONTO JUNCTION.

MEDICAL HEALTH OFFICER'S REPORT.

In compliance with the requirements of the Public Health Act I beg leave to submit the following report of the sanitary condition of the town of West Toronto Junction:—

During the past year there have been quite a number of cases of infectious diseases within the limits of the town. A low form of typhoid fever having been quite prevalent during the autumn months, very few of the cases resulting fatally.

There has been also a number of cases of diphtheria, as well as of scarlet fever, at various intervals during the course of the year; none of these diseases however became epidemic.

The cause of a great deal of illness about the town can, I think, be ascribed to the lack of a proper system of sewerage. The necessity for this is gradually forcing itself upon the public mind, and I am glad to know that this matter, which is of vital importance in regard to the future welfare of our town from a sanitary point of view, is about to be dealt with.

An excellent system of water supply has been introduced during the course of the year, and although the town water is being largely used, I would recommend the compulsory closing of all polluted wells in the line of streets wherever water pipes are laid.

Respecting night soil and garbage I may say that a contract was entered into for the removal of night soil for the year, monthly visits being made by the scavenger. On the whole this has been satisfactory. This contract, however, did not include the removal of garbage, and I would deem it wise that if a similar arrangement is made for next year that this matter be provided for, or better still, the organization of a scavenging department by the town.

The sanitary inspector, I may say, has been very attentive in the performance of his, not always pleasant, duties, and has rendered me every assistance in his power.

G. W. CLENDENAN, M.D.,
Medical Health Officer.

WEST TORONTO JUNCTION.

SECRETARY'S REPORT.

The Board has met monthly, and several adjourned meetings were found necessary. All closets have been cleaned monthly, excepting those lately constructed. Scavenger work has been attended to in lanes wherever it was necessary. All slaughter-houses and pig-pens have been removed outside the municipality. Cow-byres and dairymen's premises have been worked under permit and are visited by our inspector.

I am pleased to report that the C. P. R. Company, in compliance with our wishes, built a filtering tank to abate a nuisance arising from sewage matter at their station. The towns people also heartily co-operated with us and the inspector to promote cleanliness and good health. Already we have a good water supply, and as soon as the best method of disposing of our sewage be ascertained the work will be pushed forward to completion. Our medical health officer will report to you more particularly in regard to the health of the town. I may say that although measles and whooping cough has visited us, yet it did not become epidemic. We had a few cases of diphtheria and typhoid fever. Everything considered, the health of the people and the sanitary state of the place is exceptionally good.

JAMES RITCHIE,
Secretary.

WALKERTON.

MEDICAL HEALTH OFFICER'S REPORT.

In presenting my annual report for the year ending 15th November, 1889, I have the satisfaction to state that our town has during the past year been remarkably free from epidemics and preventible diseases of all kinds.

During the year ten cases of a very mild type of typhoid fever have been brought to my notice. One case proved fatal; the immediate cause of death undoubtedly being the exertion of travelling home to Walkerton during the height of the fever.

There have been in all five cases of measles, all in one family and all recovered. By strict isolation this very contagious disease was limited to the one family.

One case of diphtheria occurred. This case was kept isolated from members of the family and others, excepting necessary attendants, and after recovery all infected bed clothes, bedding, etc., were destroyed, and the place thoroughly fumigated, thus putting an effectual end to this dread disease.

I believe the origin of the few cases of typhoid fever was traceable in most, if not all, of the cases to impure drinking water, hence I would urge upon the Local Board of Health and through them upon the town council the necessity of providing a plentiful supply of pure drinking water. Wells or springs in a town like Walkerton cannot be depended upon to provide pure water.

Another matter which requires the attention of the health authorities and that of the town council is the disposal of excreta. In the absence of a proper system of drainage and public water supply, I would recommend that the town council pass a by-law compelling owners of houses to provide suitable structures for the use of the dry earth system. This should be brought into effect by the first of June of next year.

The drainage of some wet or swampy land in the town would also add to the safety of the public health. One place in particular, at the east end of Cayley street, near the stables of R. Truax, etc., should receive attention.

The practice by some of our ctizens of depositing refuse of various kinds about the public park at the bend of the river should be discontinued, as it is not only unsightly but repulsive and dangerous to health.

I would further recommend that the inspector next year be instructed to make in spring or early summer a thorough inspection of all premises, including yards, storehouses, stables, cellars, etc., and see to it that they are all thoroughly cleaned and put into a proper sanitary condition.

M. STALKER, M.D.,
Medical Health Officer.

WINDSOR.

MEDICAL HEALTH OFFICER'S REPORT.

This has indeed been a year of grace for Windsor so far as contagious disease is concerned. All told there have been eight cases of scarlet fever and five cases of diphtheria, and only one death from scarlet fever.

No such immunity from these diseases has occurred for a quarter of a century. We do not follow the practice adopted in some towns and cities of reporting typhoid fever, but so far as I know very few cases have occurred here during the past year; speaking for myself I have not had a single case. Remittent or continued fever has prevailed to some extent, but most of the cases have been mild and nearly all recovered.

The plan of systematically cleaning up the town during the month of May was repeated with very satisfactory results. The want of a dumping ground for garbage as well as for night soil was greatly felt and I trust a suitable place will be purchased before another season. I think the time has arrived for the erection of a more suitable building for contagious diseases; experience has shown that a building for this purpose can be used with safety within a few hundred feet of other houses, and as the present building is not at all suitable for more than one disease and not at all comfortable for any, I would ask your honorable body to appoint a committee to take the matter into consideration and report at as early a day as possible.

The Board of Health has by resolution condemned the slaughter house on McDougall street and ordered its removal. This will be a great relief to the inhabitants of the back part of the town who have suffered for years from the terrible stench, to say nothing of the depreciation in the value of property beyond the coterie, caused by this old time nuisance.

The new inspector, Mr. Giles, has done excellent work and shown great aptitude for the situation.

It may seem superfluous for me to state in this report to the body who has done the work that 12,435 feet of water main have been added this year and 6,892 feet of brick and 1,400 feet of tile sewer have also been constructed, 109 connections from private property with the public sewers have been made this year, and yet I think I am within the mark when I say that one-third of those who should connect have not done so, but continue to empty their slops at their kitchen doors.

The nominal effort made to abate the sewer gas nuisance at the foot of Ouellette street can hardly be considered as a permanent remedy, and as the owners of the dock object to carrying the sewer into the free current, I would suggest the construction of a flushing tank at the upper end of Ouellette street sewer, to be used once a week in dry weather. This would remove the accumulation of the sediment which causes the smell and would not be an expensive undertaking. Even this may not meet the difficulty, but I would respectfully suggest that the remedy should be looked for rather in the direction of a removal of the cause, than a provision made for a removal of sewerage.

JOHN COVENTRY, M.D.,
Medical Health Officer.

VILLAGES.

ALEXANDRIA.

SECRETARY'S REPORT.

I beg to report that there was an outbreak of typhoid fever, seven cases, in the latter part of the summer, caused by the affluvia from the mill pond, at the west side of the village, which had been allowed to run dry. A thorough, general inspection of all premises was made twice during the year, while there were three cases of complaints of nuisances which were promptly attended to and remedied.

ALEX L. SMITH,
Secretary.

ALVINSTON.

MEDICAL HEALTH OFFICER'S REPORT.

In my report of last year, I entered somewhat fully into several matters to which it will not now be necessary to allude. The year just closing has been one of the healthiest in the history of the village. During the year a sewer was constructed on Centre street. This was a much needed work. If properly constructed, and will do its work as expected, it will drain a large area, much to the improvement of cellars and drinking water.

Lately mumps have been endemic, and although a few persons have been quite ill, there have been no deaths. Recently scarlatina broke out in our midst. The first case was that of a child on a visit with its mother. The contagion has spread to several houses, and there is the greatest danger of it further spreading. The general opinion seems to be, that once a red card is put up all danger ceases. There seems to be no thought of keeping at home any but the sick, the other members of the family being permitted to take to the streets just as they please. It is needless to say this is far from complying with the law. There is culpable neglect somewhere. I find, notwithstanding explanations made in my report last year that a large number of people still believe that there are two diseases, having some points in common, one called scarlatina, the other scarlet fever. This is wholly a delusion. Fortunately no deaths have so far occurred, but at this season of the year, that cannot be long said. I would earnestly urge our Board to enforce the law. Scarlatina and all zymotic diseases are apt to be more virulent in winter, owing to the comparative lack of ventilation.

I would draw attention to the immunity enjoyed by the residents of Alvinston from consumption. During the last eight years, I can recall but five deaths from this cause. Two of these were laboring under the disease on removing here. This shows a record not excelled by any other place of equal population.

ANGUS MACKINNON, M.D.,
Medical Health Officer.

ACTON.

MEDICAL HEALTH OFFICER'S REPORT.

The inspection of the town shows a very satisfactory sanitary condition. The drainage system is in good order. No offensive accumulation of any kind within the municipality. Cellars well cleaned. In a few cases I would recommend private drains from the cellar to the main drain owing to a damp condition of the floor and walls, caused by stagnant water at certain seasons in the cellar. During the month of August, typhoid fever broke out, due no doubt to the deplorable state of the slaughter-houses; their removal was recommended, and immediately executed. This, with other precautionary measures had a beneficial effect, only three cases of fever occurring and none since that time.

I am pleased to be able to state that the town has been entirely free from contagious diseases of all kinds during the past year. The rate of mortality has been very low, most of the deaths occurring among those far advanced in years.

The water has been found to be pure. The amount of calcium carbonate in the soil acting as an absorbent of impurities and counteracting their effects.

C. E. STACEY,
Medical Health Officer.

BATH.

MEDICAL HEALTH OFFICER'S REPORT.

I have the honor to report that the sanitary condition of the municipality for the current year has been extremely satisfactory. No serious contagious disease has prevailed. There have been a few cases of scarlatina, and the ordinary precautions have been taken to limit the spread of the same. The municipality is to be congratulated on the absence of any serious disease during the present year.

B. KENNEDY, M.D.,
Medical Health Officer.

BLYTH.

MEDICAL HEALTH OFFICER'S REPORT.

I have the honor to report that our village has maintained its reputation for healthfulness during the past year. That the deaths have only been eight, or less than one per cent. which is below the average. With the exception of a few cases of typhoid fever which proved to be of a mild character, we had no epidemics of any kind. The Board of Health is properly organized and ready for any emergency; but the sanitary condition of the village is so satisfactory that no complaints have been made during the past year, and hence no official action has been required.

WILLIAM SLOAN, M.D.,
Medical Health Officer,

BELLE RIVER.

CHAIRMAN'S REPORT.

It s gratifying to me as Chairman of the Local Board of Health for the current year to be able to report so favorably on the sanitary condition of our village.

We have had no cases of contagious diseases during the year to this date.

The chief complaint during the early part of the summer arose from the decaying manure, and slaughter-houses, as these complaints were mostly verified by inspection by some member of the Board, it was ordered that the Health Act be enforced.

The general health of Belle River is, and has been good notwithstanding the unusual scarcity of water throughout the whole village.

I think I may reasonably conclude that the efficiency of our inspector, and the willingness of the inhabitants generally to attend to the sanitary matters when desired, have in a great part been the cause of our surprising freedom from contagious diseases.

E. V. DECAIRE,
Chairman,

DUNVILLE.

SECRETARY'S REPORT.

I have the honor to submit herewith the annual report of the Board of Health, and in doing so would say that our municipality has been unusually free from contagious diseases. The death rate of the past year has been smaller than in any year during my incumbency of office, a period covering six years. We have had only thirteen deaths, and of those, eleven were infants, cholera infantum carrying off 8 ; water on the brain, 1 ; cerebro spinal meningitis, 1 ; accidéntally killed, 1 ; while the death of but two grown persons were reported, viz., found dead, 1 ; peritonitis, 1.

The total of contagious diseases reported were, diphtheria 5 ; measles, 6 ; scarlet fever, 2 ; none of which proved fatal. We found on our annual visit of inspection which began on May the 15th, 36 privies, 14 manure heaps, 18 back yards and 9 drains which required attention, all of which were attended to by the persons interested ; and by constant diligence throughout the year, we have been able to check any irregularities as they arose, and now report our town in fair sanitary condition, and free from contagious diseases.

J. W. HOLMES,
Secretary.

CHIPPAWA.

SECRETARY'S REPORT.

The health of this municipality for the present year has been good. No complaints requiring the action of the Board have been received. We have had no cases of diphtheria, scarlet fever, or typhoid fever, for the last ten months, and we have not been visited by any epidemic. There have been but two deaths, and they were old people.

WM. GREENWOOD,
Secretary.

CARDINAL.

MEDICAL HEALTH OFFICER'S REPORT.

In presenting my annual report as Medical Health Officer, I have to congratulate the people of our village on their immunity from any epidemic of either contagious or infectious diseases during the past year.

The usual complaints of offensive premises, neglected privies and defective drains were promptly attended to by the sanitary inspector.

I feel bound to call the attention of our Board to the prevalence of hog-pens in our midst. Several complaints have been made about these pens, and as yet no action has been taken. The stench arising therefrom during the warm weather is enough to cause a plague. It is to be hoped that our Board will take the matter in hand and rid us of this nuisance.

DUNCAN GOW, M.D.,
Medical Health Officer.

EXETER.

SECRETARY'S REPORT.

In making my report I am pleased to say that the people of this village are learning that it is in the best interests to work harmoniously with the requirements of the Board of Health, indeed, as a Board we have had very little trouble in enforcing sanitary measures, particularly so since your visit to this village. I must say, however, that owing to the lateness of the season and frequent rains, it was thought best not to press the matter of a tile drain in the bottom of the creek running through the village until next summer, when we hope the council will comply with your requirements. From the Medical Health Officer's report I glean the following:—That the sanitary condition of the village for the past year has been good, beyond the ordinary causes over which we have no control. There have been ten cases of typhoid fever, nine of which have recovered, and one in a fair state of recovery. One case of diphtheria, also ending in recovery. At present there is not a single case of contagious disease reported in the village.

M. EACRETT,
Secretary.

FERGUS.

MEDICAL HEALTH OFFICER'S REPORT.

The health of our municipality for the present year is most gratifying. We have been almost completely free from the worst forms of contagious diseases, having no deaths, and only two or three very minor cases of diphtheria, scarlet fever and measles. There has been very little work for the Board of Health. A few nuisances were complained of, and were at once ordered to be removed. Typhoid fever has been more or less general all over the Province and we unfortunately have not escaped. Strange to say, it has been confined to the northern and highest part of the village, several houses being afflicted. Careful inspection and examination fail to show any general cause for its prevalence. The milk and water supply were separate, drainage was good and the premises belonging to those affected, were more than usually well kept and clean; and we at present cannot account for the trouble. It has been noted very often with us that typhoid follows the use of a new well and a new log pump; and it is a question whether the green woody fibre may or may not be one of its agents. Our experience would say it was, but why we cannot say. We again repeat the necessity of prohibiting cesspools and privy vaults, and would insist on a more thorough inspection of the different yards, etc., in all parts of the corporation.

W. H. JOHNSON, M.D.,
Medical Health Officer.

MILLBROOK.

SECRETARY'S REPORT.

I beg to report that the sanitary condition of the village has been good for the past year.

There has been no outbreaks of contagious diseases, and very little sickness of any kind with the exception of two cases of diphtheria, one of them fatal.

There is a large sewer running through the main street of the village that carries off a large amount of sewage, etc.

The village is well supplied with an unlimited amount of pure spring water.

There was a complaint laid before the Board with reference to a quantity of stagnant water. The complaint was attended to at once, and the water removed. No other complaint made.

The sanitary inspector and medical health officer attend to their duties in a very satisfactory manner.

W. TURNER,
Secretary.

MORRISBURG.

MEDICAL HEALTH OFFICER'S REPORT.

In presenting you with my annual report on the condition of the health of the inhabitants of this village, I am happy to say that the past year has been an exceptional one. So far as I know not a single case of infectious or contagious disease of importance has visited our village, and at this time the sanitary condition of the municipality is in a very satisfactory state.

T. F. CHAMBERLAIN, M.D.
Medical Health Officer.

MERRICKVILLE.

MEDICAL HEALTH OFFICER'S REPORT.

I have the honor to report that the public health in the municipality of the Village of Merrickville has been generally satisfactory during the year. No endemic cases of infectious or contagious diseases have been noted, with the exception of whooping-cough, and a single imported case of typhoid fever. The whooping-cough was likewise imported from a distance, and spread to a limited extent, causing one death in an infant under six months. The sanitary condition of the village is satisfactory. The annual drawing off of the waters of the Rideau river by the government at Ottawa, leaves us exposed to attacks of malarial diseases.

M. K. CHURCH, M.D.,
Medical Health Officer.

MARKHAM.

MEDICAL HEALTH OFFICER'S REPORT.

In making my annual report I have to congratulate our Board on the immunity from contagious diseases enjoyed by this municipality during the past year, for beyond two isolated cases of diphtheria of a comparatively mild type, none have been reported. These cases were promptly quarantined, with the result of putting an end to the disease. In the matter of closets there is a great improvement since my last report. I would again urge upon you the advisability of adopting earth closets in many of the more thickly populated portions of the village, as many are in dangerous proximity to wells of drinking water, and may at any time prove a source of disease.

M. ROBINSON, M.D.
Medical Health Officer.

NIAGARA FALLS.

SECRETARY'S REPORT.

I have the honor to report that the sanitary condition of this municipality during 1889 has been exceptionally good. The sanitary inspector was very zealous in the discharge of his duties, and reports that the inhabitants cheerfully and promptly complied with any suggestions made by him. He made a house to house inspection, caused hog-pens and water-closets to be cleaned, and holes containing stagnant water to be filled, and premises generally to be kept in a state of cleanliness. He further reports that the keeping of hogs within the limits of this municipality will soon be a thing of the past, and says that this village is one of the cleanest in Ontario.

M. B. MORRIS,
Secretary.

OIL SPRINGS.

MEDICAL HEALTH OFFICER'S REPORT.

In March last malignant diphtheria made its appearance in our midst, and by most stringent quarantine regulations it was confined to one house. Of the four cases that occurred two proved fatal.

The Board of Health deserve great credit for the stringent and efficient means they adopted for stamping out the disease.

Otherwise the village has been remarkably free from contagious and infectious diseases.

A. R. HANKS, M. D.,
Medical Health Officer.

PRESTON.

SECRETARY'S REPORT.

Our health inspector made his annual inspection and found the sanitary condition of our village very satisfactory, with the exception of two or three cases, which have been attended to by our Board of Health.

We have had a few cases of scarlet and typhoid fever of a mild form, none of which proved fatal.

The mortality during the year has been very low.

W. A. HUSBAND,
Secretary.

PORT ELGIN.

MEDICAL HEALTH OFFICER'S REPORT.

Since last annual report the general health of our village has been remarkably good, no cases of diphtheria, scarlet fever, measles, whooping-cough, or mumps having occurred even to date. During September, October, and November up to present writing, (Nov. 14th) we have had a few cases of typhoid fever of a mild type, none directly fatal, and only one indirectly.

The dry-earth system of water-closets has been adopted with very few exceptions. The citizens, however, have in many cases been too sparing with their earth, ashes, deodorants and disinfectants, but our sanitary inspector will see that this matter will be better attended to in the future.

Our Board of Health is a live one, looking after the sanitary interests of the village with an intelligent zeal worthy of their important office.

In Mr. Angus Currie we have had for a number of years an eminently efficient sanitary inspector, faithful in the discharge of his duties, universally respected and obeyed in carrying out the regulations of the Board without having had, in any single instance, to invoke the law.

As to the neatness and cleanliness of our streets and alleys, we do not fear a comparison with any other Ontario village or town.

CHAS. SHUPE, M. D.,
Medical Health Officer.

POINT EDWARD.

SECRETARY'S REPORT.

It affords me much pleasure to be able to state that the duties of the Board of Health for the past year have been merely nominal. Early in the spring the Board caused the sanitary inspector to call upon the villagers and notify them to clean up their premises. This with very few exceptions was cheerfully complied with. During the latter part of August and September there were eight cases of typhoid fever. One proved fatal. No other diseases of a serious nature were reported, and the village is believed to be in an excellent sanitary condition.

W. MITCHELL,
Secretary.

PORT STANLEY.

MEDICAL HEALTH OFFICER'S REPORT.

During the year ending Nov. 1st, 1889, the village has been remarkably free from disease, with the exception of whooping-cough during the winter of 1889. Four cases of typhoid fever were reported, two of which were contracted in London, and one was contracted by a girl having to pass a slaughter-house, which was situated in the village about forty yards from the street. I recommended the Board of Health to remove it in the spring, but it failed to take action till September.

We have been troubled by a stench arising from the holes where the owners of the steam fisheries dump the offal and dead fish. The Board has prohibited them from doing so, with the result that it has not been so bad this year as formerly. Still they occasionally break the instructions of the Board.

There is another matter to which I would like to call the attention of the Provincial Board, that is the condition of the harbor, which is leased by the Grand Trunk railway.

It has been allowed to fill up with a deposit from the sewers of the city of St. Thomas, and during the heated term there is quite a stench arising from it.

During the epidemic of smallpox in the adjoining municipality of Southwold the village was guarded and no one from the infected district was allowed in to the village.

I made a house to house inspection and vaccinated all the inhabitants, men, women, and children.

There has been no deaths from contagious diseases during the past year.

L. J. MOTHERSILL, M.D.,
Medical Health Officer.

SOUTHAMPTON.

MEDICAL HEALTH OFFICER'S REPORT.

It affords me much pleasure to be able to report, that during the past year our village has not been visited by any diseases of either a contagious, or infectious nature, except a few cases of whooping-cough in the spring. The very excellent sanitary state of our village I attribute to the purity of the water supply, the pure air from Lake Huron, and the perfect drainage obtained through the coarse bed of sand, on which the village is built. Sanitary regulations are well observed by the inhabitants.

WILLIAM S. SCOTT, M.D.,
Medical Health Officer.

STOUFFVILLE.

SECRETARY'S REPORT.

We have this year enjoyed perfect freedom from all epidemics. I am not aware of a single case of contagious disease having existed in our village this year. In 1888 as you are aware, we had two cases of smallpox that cost the Local Board of Health a great deal of anxiety and extra trouble; but with great care we kept it confined to the one house and family. Unfortunately, however, our experience and trouble with the affair was not as easily controlled as the disease itself. This last spring, a suit was brought against the Local Board of Health to recover $1,500 damages for the isolation of a person who had been exposed, and although the plaintiff was not successful in sustaining the charge against the Board, an award being made in favor of the Board, that he the plaintiff, should pay all costs, and he was not worth anything, the entire expense, nearly $500 has fallen upon the village, with but little or no hope of ever recovering it again. This case alone shows the great importance of having all legislation in a form well calculated to afford every possible protection to the Local Boards of Health, and indeed, to any person who assist in any way in promoting the sanitary interests of a municipality.

HENRY W. WOODGATE,
Secretary.

STIRLING.

MEDICAL HEALTH OFFICER'S REPORT.

I have the honor to report that the sanitary condition of the village of Stirling, has been good during the past year.

That no contagious or infectious diseases have been prevalent or reported to me. No nuisances have existed within the corporation to my knowledge.

G. H. BOULTER, M.D.,
Medical Health Officer.

STREETSVILLE.

SECRETARY'S REPORT.

In May and June, a house to house visitation throughout the village was made by the Sanitary Inspector, who reported that he found the dwelling-houses and premises generally in a satisfactory condition. In October, the Board instructed the inspector to make another inspection of the municipality, but no report of such inspection has yet been received.

At the date of the last annual report an outbreak of diphtheria existed in the village. At the close of 1888, there were still several cases, and there were two deaths in the first week in January. After that time there were reportad two cases of diphtheria, which were followed by recovery, and one case of diphtheritic croup, which proved fatal. With the aid of the physicians in attendance on the patients, every means was used as to isolation, disinfection, as well as cleansing of premises for preventing the spread of the disease. After January no fresh cases were reported, and since then the village has been free from any infectious disease, with the exception of a few cases of whooping-cough. During the summer and autumn, the health of the village has been particularly good. The village council has passed a by-law to prevent any interments taking place after the 31st December, 1889, in the overcrowded burial ground in the east end of the village, to which reference has been made in previous reports.

The nuisance hitherto complained of in connection with slaughter-houses in the village is undergoing abatement. One slaughter-house has already been removed to a field in the south corner of the village, at some distance from any dwelling-house, where it has been placed with the permission of the Council and the Local Board of Health, subject to the proprietor's complying with the provisions of the Public Health Act, and the conditions contained in Schedule A appended to the said Act,

Another circumstance in favor of the sanitary condition of the municipality is the diminished number of piggeries, While there were about fifty hogs kept in the village in 1885 and 1886, according to the assessment roll, there were only nine at the time the assessment was made last spring.

WM. J. PINNEY,
Secretary.

THEDFORD.

SECRETARY'S REPORT.

The general health of the inhabitants I am happy to say has been good. All circulars and correspondence received have been invariably read to the Board. Well water supplies the village for drinking purposes, and is sharply looked after that it be kept pure and wholesome. Drainage and water courses are attended to by our engineer. The Board met five times during the year. There has been eight deaths during the year, all advanced in life between sixty and ninety years, except an infant who died of spinal paralysis.

The sanitary condition of the village up to the present has been excellent, and the residents are encouraging the Board of Health and stimulating them to vigilance in their duties.

H. M. WATTSON,
Secretary.

WATFORD.

MEDICAL HEALTH OFFICER'S REPORT.

In accordance with the provisions of the Public Health Act I beg leave to report as follows :—

In the early part of the year a few cases of measles occurred, but of mild type with no fatal results.

The drought of summer and early autumn reduced the water supply and a few cases of typhoid fever occurred, eleven in all, the result of drinking impure water. Two cases fatal, one of them a child had severe brain complication from an early stage which hastened its death. None became affected by contagion.

The sanitary inspector made no report, and some comments in paper led the Board to appoint Mr. Reid to make a thorough inspection. His report was published in *Guide Advocate* and showed that the municipality was in very good state.

The health of village as a whole has been good, but the necessity for a better system of drainage has manifested itself on several occasions.

ROBERT GIBSON, M.D.,
Medical Health Officer.

WATERDOWN.

MEDICAL HEALTH OFFICER'S REPORT.

As Medical Health Officer it becomes my duty to report on the state of the health of the people of this municipality for the year just closing. Very few deaths have occurred, and only one from infectious disease. This happy state of affairs is no doubt due to the action of the Board at different times in the past in improving the sanitary condition of the village. This year in accomplishing the removal of the slaughter-house situated at the west boundary of the village, which has always been a menace to the health of this community, our freedom from epidemics and our very low death-rate will no doubt be continued.

On one point only would I counsel our Board, and that is to take action during the coming year to prevent the building of vault water closets, which have certainly at different times contaminated the wells of the village, as several cases of typhoid have been traced directly to this cause, and they will be a continually growing danger if allowed. The dry earth or ash closet with cleaning at least once each year, as the Health Act provides, is the only safe closet for a village community.

J. D. COURTENAY, M.D.,
Medical Health Officer.

WIARTON.

MEDICAL HEALTH OFFICER'S REPORT.

The sanitary condition of the village has been particularly good, owing principally to our sanitary inspector, Mr. Hull, and our diligent clerk, Mr. T. Galloway, having made two inspections of the entire village, and enforcing rigorously in every case the instructions of the Local Board of Health. We have been almost entirely exempt from all diseases of a contagious character as compared with last year, when we had a considerable number of cases of fever of a typhoid form, owing I think to bad well water.

I attribute the almost entire freedom of our village this year from fever to our splendid system of water works. What we require now is a properly constructed sewer system, a closing up of all wells used for drinking purposes, the entire abolition of privy pits and cesspools. If these suggestions were carried out I am satisfied we would have a village second to none in the Dominion in a sanitary point of view.

R. M. FISHER,
Medical Health Officer.

WARDSVILLE.

MEDICAL HEALTH OFFICER'S REPORT.

I have to report the present condition of our municipality free from all contagious diseases. We did have diphtheria here for some years back, but for months past no cases have made their appearance. Our district has been more than healthy for months past.

GEORGE GORDON, M.D.,
Medical Health Officer.

WELLINGTON.

CHAIRMAN'S REPORT.

This fall is the first time since the passage of the Health Act that any formal complaint has been made to the Board, and it was in relation to a slaughter-house and three or four privies. On investigation and warnings being given the slaughter-house was abandoned, premises cleaned and disinfected. The privies were also attended to.

The general health of our village has been good, owing largely no doubt to the pure, fresh, bracing air of Lake Ontario, on the very shore of which we are located.

BARL. WISTAR,
Chairman.

TOWNSHIPS.

ADMASTON.

SECRETARY'S REPORT.

I have to report that the sanitary condition of this municipality is so good that the council have not appointed any medical health officer for the present year. The Local Board have met only once, as there were no complaints handed in to any of its officers during the year. There has been but one case of typhoid fever and the patient is recovering, and there is apparently no danger of it spreading any further. There is not, nor has there been, any other contagious diseases in the municipality that I am aware of during the year.

JOHN CONNOLLY,
Secretary.

ATHOL.

SECRETARY'S REPORT.

I have the honor to inform you that the Local Board of Health for the township of Athol have had nothing to do during the year now drawing to a close. There has been no outbreak of infectious or contagious diseases, nor has any notice been received of the existence of such diseases. The sanitary condition of the municipality is excellent.

W. MOORE,
Secretary.

AMELIASBURG.

MEDICAL HEALTH OFFICER'S REPORT.

I have again to congratulate our Board on the general good health which has prevailed throughout the township during the year, and the light duties required of the health officers in consequence.

There have been two or three cases of typhoid fever and a case or two of diphtheria reported it is true, but they were isolated cases and did not take on an epidemic form. Whooping-cough has been prevalent in some parts of the township, but of a mild form and seldom requiring medical treatment; in fact, whooping-cough is not a very serious disease amongst the healthy rural population of which this health district is chiefly composed.

Some matters come have to my notice which I did not deem of sufficient importance to report to the Board, but you can rest assured that any matters of importance relating to the health or sanitary condition of the district will be promptly laid before you.

A. J. FILE, M.D.,
Medical Health Officer.

ALBERMARLE.

SECRETARY'S REPORT.

We have the gratification (which has been usually our good fortune) of reporting the entire absence of all contagious or infectious diseases in this municipality.

There have been a few more deaths than in the preceding year, but they have been chiefly from natural causes, which fact, we believe, speaks much in favor of our salubrious climate and pure water. Our healthy condition may also be partly attributed to the efforts of our respective sanitary inspectors, in guarding against the existence of any matter or thing that might be injurious or detrimental to the public health.

The services of our medical health officer have not been required, and in consequence this Board have deemed it entirely unnecessary to have a report from said officer for the present year, thereby saving the expense of the same.

CHARLES WHICHER,
Secretary.

ALDBOROUGH.

SECRETARY'S REPORT.

Two sanitary inspectors having been appointed by the municipal council of the said township, one for the west and the other for the eastern division thereof, your Board did cause a thorough examination and inspection to be made by the inspectors, of all cellars, wells, privies, cheese-factories, and slaughter-houses, in the township, and where necessary did cause the same to be put in a proper sanitary condition, in which condition they now are.

On or about the 20th of February smallpox was introduced into this township by a family coming from the township of Southwold, in which the disease was then raging, and broke out in the village of West Lorne. Your Board in conjunction with the township council took prompt and decisive measures to stamp out and prevent the spread of the disease. A physician was specially engaged to attend the persons afflicted. Compulsory vaccination was introduced. A strict quarantine of all persons afflicted with or who had been exposed to the disease, and of all buildings infected therewith, was established, and efficient guards were placed on the leading roads in the township to prevent the ingress aud egress of all persons to and from the infected districts. Your Board are pleased to say that the means employed were effectual in confining the disease to the house and family in which it originally broke out. There were only two cases of smallpox altogether, and no deaths therefrom. On the recovery of the persons afflicted the building in which they had been while ill was burned, as well as all clothing, furniture, and other articles infected, and every portion of the premises, including the soil in which refuse from the house had been buried, was thoroughly disinfected.

The number of cases of contagious disease in this township, considering its extent and population, during the current year have been comparatively small, the deaths resulting therefrom being only four. The health and sanitary condition of the community are, generally speaking, satisfactory.

Your Board feels bound to mention the fact that local physicians are not as prompt as they should be in reporting cases of infectious diseases coming under their notice to the medical health officer. Several cases of this kind have come to the knowledge of individual members of your Board during the current year, happily, however, after all danger of the spread of the contagion had ceased.

The work of your Board being much heavier, and involving far greater responsibilities than in former years, necessitated the holding of nine meetings, and the expenditure of some $1,200.

H. F. JELL,
Secretary.

ANCASTER.

SECRETARY'S REPORT.

I take great pleasure in reporting that this municipality has been in a very healthy state during the whole of the past year, and that its sanitary condition is most satisfactory.

The system of requiring persons to apply for permits who carry on the business of slaughtering, dairying, cheese-making, etc., followed up by proper inspection, has had a good effect in checking and preventing nuisances of this kind.

JOHN HESLOP,
Secretary.

ADELAIDE.

SECRETARY'S REPORT.

It is gratifying to me to state to you the entire absence from our township of all infectious or contagious diseases during the year; in fact it has been the most healthy period that it has been our good fortune to be blessed with since the formation of the Board of Health for the township. Cheese factories have been examined by the sanitary inspector and put in a sanitary condition. The health and cleanliness of the township is good.

WM. MILLER,
Secretary.

BRANT.

SANITARY INSPECTOR'S REPORT.

I beg leave to present a summary report of the work I have done as sanitary inspector during the present year up to date. I have been out inspecting twenty-six days altogether. I have travelled over three hundred and eighty (380) miles, and in doing so I have made two general inspections of the cheese and butter factories, slaughter-houses and villages. When, after inspection, I recommended to the Board that permits be granted to the several parties who were carrying on the business of the factories and slaughter-houses. The villages, or rather the parts of some of them which belong to your corporation, viz.: Elmwood, Hanover, Cargill and Edengrove, I inspected in the spring and fall, and in so doing I made a personal inspection of one hundred and seventy-three (173) private and public yards. Ninety-nine of these were properly cleaned up; the remaining portions of them, with very few exceptions, were in a fair sanitary condition. I inspected forty-five wells. Nineteen of these were cleaned out in accordance with the requirements of the law. I received fair promises from the parties who owned the remaining portion that they would have them cleaned out. During the year I inspected over one hundred water-closets. About one-third of them were in good condition, and the majority of the rest in a fair state, yet some of them were not so clean as they should be. I received several notices complaining of different kinds of nuisances, the greater number of which I attended to.

It may be out of place for me to speak of the health of our township, as our medical health officer no doubt will report that in full; but it is very gratifying to know that we have had so very few cases of typhoid fever, while it has been so prevalent around us. When I was in Hanover I was informed on good authority that there were six or seven cases of it on the Bentinck side. Some of them, as reported, were of a malignant nature.

and I feel happy to be able to state that there was not one case of it on the Brant side. After taking the township as a whole I am safe in stating that it has vastly improved in a sanitary point of view since our Board was first established. All we could wish for has not been accomplished, yet a very great deal has been done already, and we hope that it will still go on improving. No doubt there are still a few kickers here and there, but they are getting fewer and fewer every year, and on the other hand there are many who are glad to see me coming around.

During the year I have had to serve eight notices on parties on account of the existence of nuisances.

JAMES NESBITT,
Sanitary Inspector.

BEVERLEY.

MEDICAL HEALTH OFFICER'S REPORT.

It affords me much pleasure to state that in my experience of eight years I have never before known a year as free from diseases of an epidemic or infectious nature. In the month of January, however, the south-eastern portion of the township was visited by that terrible scourge diphtheria, which fortunately was confined to one habitation alone.

Every precaution that sanitary science and common sense could suggest, coupled with the most rigid rules of quarantine or isolation were enforced, with the happy result as above stated. Two of the oldest of the family and the youngest succumbed to its terrible onslaught in a few days, apparently dying from heart failure or the effect of the poison on the heart, muscle or nerve, rather than asphyxia. In each case death was preceded by some sudden exertion such as sitting up in bed, or in the youngest child struggling against the treatment of the throat. This was carefully guarded against and the parents warned to enforce absolute quiet. The remaining child, whose symptoms were of an extremely mild type, even if they were the symptoms of diphtheria at all, as he had scrrcely any constitutional disturbance whatever, recovering in two days. After these occurrences there were a great many reports circulated of not a few cases of the same nature, but I am satisfied that they were simply follicular sore throat, as they all recovered and were out in from one to three days, and I am of the opinion that they were called diphtheria by some over-zealous persons anxious to gain notoriety. The balance of infectious and contagious diseases reported were a few cases of scarlet fever and measles, with six cases of typhoid fever and a few cases of malaria. The typhoid and malaria were directly traceable to defective drainage in the village of Lynden, where the case mentioned occurred. From a sanitary standpoint Lynden was and will be again next spring in a most deplorable condition, owing to ponds or large cess-pools where filthy surface water collects, which fairly reek with the odor of decaying animal and vegetable matter, if the Board of Health do not take action in the matter next spring and compel each owner of property to keep the drains clear and open.

ALBERT E. STUTT, M.D.,
Medical Health Officer.

BOSANQUET.

MEDICAL HEALTH OFFICER'S REPORT.

I am pleased to be able to report that the sanitary condition of the township has been good. With the exception of a few cases of typhoid we have not had any contagious diseases.

With one exception, a slaughter-house which has been attended to, the condition of the slaughter-houses and cheese factories has been good.

The school-houses have been kept clean, with wells cleaned and out-houses well disinfected.

The people attend to all the rules of the Board with one important exception. Vaccination is not attended to as it should be.

W. A. MUNNS, M.D.,
Medical Health Officer.

BENTINCK.

SECRETARY'S REPORT.

The Board held three meetings during the year at which the various complaints made were dealt with. As the Board has no medical health officer to report cases of disease which may be prevalent, they have relied upon what they could gather from observation and other sources, and are pleased to report that the state of the public health of the township for the past year has been comparatively good. One case of diphtheria came under the notice and attention of the Board, and being of a malignant type it proved fatal, but the disease did not spread. There were several cases of typho-malarial fever in the township which may have originated from various causes, none of which terminated fatally.

DUNCAN CAMPBELL,
Secretary.

BROCK.

MEDICAL HEALTH OFFICER'S REPORT.

The work of the Board of Health during the past year has been of a very imperfect character, owing to the Board being without the services of an inspector for the greater part of the year. This we understand was due to a plea of economy on the part of the council. The result was, of course, no inspection of our village or municipality, and we were really not aware of its sanitary condition. A few places, however, became so bad that the neighbors were forced to complain to the Board, and an inspector was appointed a few weeks ago and the nuisance removed.

During the past year our municipality has been remarkably free from contagious diseases. Diphtheria and scarlet fever being conspicuous by their absence, and typhoid visiting us but three or four times. This we consider extremely fortunate as there is a feeling of antagonism towards the Board in our municipality and a tendency on the part of the council to submit to the public opposition, thus leaving the Board in a poor condition to cope successfully with epidemics or other difficulties that might arise.

In conclusion we must say that we cannot endorse the action of the council in neglecting the appointment of an inspector, and the annual house to house inspection, imperfect as it sometimes is, was sadly missed, and we trust that in the future nothing will be neglected that would tend to improve the sanitary condition of the municipality and thus preserve the health of the people.

DRS. McDERMOTT & FIERHELLER,
Medical Health Officers.

BOLTON.

SECRETARY'S REPORT.

Nothing of importance occurred requiring the action of the Board until the 2nd of August, when they were called on to visit certain residences occupied by the poorer classes said to be in a very dirty and unsanitary state.

The Board visited the premises complained of and found that the complaints were not exaggerated, and ordered the parties in occupation to immediately have their houses and premises thoroughly cleaned, which was complied with.

On a second visit the Board found everything satisfactory. In one case, owing to the infirmity of the occupant, the Board ordered the cleaning to be done at the expense of the municipality.

Some cases of typho-malarial fever in the suburbs were reported. The patients being isolated in their immediate neighborhood the medical health officer left it to the discretion of the Board to take action in the matter. Having visited the places reported the Board considered it unnecessary to take further precaution to prevent spread of the disease than had been done.

The owner of a diseased cow was notified to confine the animal to his own premises and have it destroyed, the animal being considered not fit to roam the village at large, vitiating the air while doing so. The owner failed to comply with the notice; the cow was killed and buried.

The general health of the village has been fairly good.

SAM'L. A. WALFORD,
Secretary.

BRUCE.

MEDICAL HEALTH OFFICER'S REPORT.

I have again to state this year that our municipality has enjoyed comparative freedom from epidemic diseases.

Typhoid fever broke out in a few families, also diphtheria prevailed in different localities, with only one fatal case. In so far as my attention was called to these two diseases I found the surroundings in a very unsanitary condition, so much so as to force the conclusion that these diseases were due to local causes.

I still find that the physicians are neglecting to report the cases under their care.

A. MACKAY, M.D.,
Medical Health Officer.

BLANSHARD.

MEDICAL HEALTH OFFICER'S REPORT.

In presenting to you my annual report, I desire to draw your attention to the good health with which we have been blessed during the year.

This much to be desired condition is no doubt largely due to the active interest displayed by our Board in dealing with those unsanitary conditions which if left unheeded produce diseases of various forms, and in taking active precautions against the spread of epidemics as soon as their presence becomes known.

Scarlet fever, the only epidemic which seriously threatened us, broke out in McIntyre's school in the month of March. It was of a mild type, and on this account made its appearance in the school-house before its presence in the section was known to the public.

At first intimation of the disease a meeting of the Board was held. We closed the school, isolated the affected families, disinfected and cleansed the closets and school-house, and so successful were we in the measures taken to prevent the disease spreading that it was wholly confined to the families affected when the school was closed. We resolved at this meeting to have such extracts from the Health Act as referred to the duties of teachers, parents and others, printed and hung up in each school-house in the municipality. This was immediately attended to, and now teacher and children know the law in this respect and act upon it. The result following the interest taken by the Board in this case and similar ones has proved conclusively to the ratepayers the great value of the sanitary work we are accomplishing.

Typhoid fever made its appearance in but two families, and only one member in each family was attacked. In each case the fever run a course of about five weeks and resulted in recovery.

One contracted the fever while on a visit near Hamilton, the history of the other case was not obtained.

Proper precautions were taken to disinfect and prevent the disease spreading.

German measles made their appearance in the Woodham section in the month of May, but beyond the inconvenience to families attacked, produced little sickness except in two cases, where an adult was the sufferer and where a sickly child was very seriously ill from the attack.

Diarrhœas of a severe type were more prevalent during the summer and autumn months than for years previous, but the mortality was much below the average.

We have had no cases of diphtheria this year.

Members of the Board report the schools, school grounds and closets in all the sections but one in first-class sanitary condition. This single exception has been a source of complaint for years owing to want of drainage. No heed having been taken to previous recommendations the trustees were notified that unless the matter was at once attended to the law would be put in force. This had the desired effect, and we hope when spring, with its superabundance of water appears, this ground will shew the benefit of good drainage.

Dairies, cheese factories and butter factories and slaughter-houses require more than passing notice, and the provisions of the Health Act regarding these industries should be prudently enforced.

I would again draw the attention of this Board to the fact that a large percentage of school children are not possessed of a vaccine mark. As a Board of Health we should see that the Act respecting vaccination is rigidly enforced. We cannot estimate the amount of trouble that would thus be saved in the event of an outbreak of smallpox.

W. IRVING, M.D.,
Medical Health Officer.

BROOKE.

SECRETARY'S REPORT.

The Board met and organized on the 16th February. Committees were appointed to inspect and report upon the two cheese-factories doing buiness in the township, which was done, the conditions of factories and surroundings being fairly satisfactory.

On the 21st September a special meeting of the Board was held to consider complaints relative to the filthy and offensive state of a slaughter-house on lot 18, concession 6, just west of the corporation boundary of the village of Alvinston. In accordance with

a resolution of Board then passed I wrote the parties using same that it it was not cleaned up and kept clean, action would be taken under section 63 of the Health Act, R. S. O. 1887. I understand from Mr. Bowlby, who was appointed to inspect same, that they complied with request, though somewhat tardily.

I am not aware of any smallpox, fevers or diphtheria being in existence in the township, now nor at any time during the year. The general health of the inhabitants is very good.

I regret to have to notice the removal of one of our colleagues by death. Mr. Lovell had held responsible positions both in the municipal council and the agricultural society, and at the time of his decease was a member of this Board.

W. G. WILLOUGHBY,
Secretary.

BEDFORD.

MEDICAL HEALTH OFFICER'S REPORT.

My report for 1889 must necessarily be brief owing to no cases of contagious disease having come under my notice, with the exception of a few cases of whooping-cough which at present exist in the vicinity of Crow Lake. These, however, are thus far of a mild form.

The municipality is to be congratulated on its excellent sanitary condition.

A. W. DWYRE, M.D.,
Medical Health Officer.

BLENHEIM.

CHAIRMAN'S REPORT.

We have much pleasure in stating that our township has been comparatively free from any epidemic. A few isolated cases of mild typhoid reported. None of them proved fatal. Precautionary measures were taken and the disease did not spread. No diphtheria reported during the year, nor any other contagious or infectious diseases.

The committees of the Board during the year have visited the school houses and slaughter houses, and found them in a satisfactory condition, and the trustees and proprietors in all cases willing to comply with the requirements of the Act. The Board has suceeeded in having all slaughter houses removed from villages to points outside.

We would suggest that the Provincial By-Law be so amended that the words "15th day of May" in Rule respecting hogs may read "15th day of April.

All of which is respectfully submitted.

W. R. PENTLAND, M. D.,
Chairman.

CARDIFF.

SECRETARY'S REPORT.

I beg to report that there have been very few deaths in this municipality during the year, and that they are all attributable to natural causes.

I have further to report that the lumbering firm of Rathbun & Co., of the village of Deseronto have built dams on the outlet of Pawdash and other lakes, thereby causing an amount of drowned land, and that the inhabitants in the neighborhood of these lands are complaining of the unhealthy smell following the letting off of the waters from said drowned lands.

A. W. WILLIS,
Secretary.

CHINGUACOUSY.

SECRETARY'S REPORT.

I have the honor to inform you that the duties of the Local Board of Health for the township of Chinguacousy for the current year have been light. The health of the inhabitants of the township has been good. There have been no outbreaks of infectious or contagious diseases so far as I know. The sanitary condition of the municipality is excellent.

The only complaints received by the Board were those respecting slaughter houses, which were attended to, and one case of stagnant water said to be a nuisance, which the Board ordered to be removed by the owner of the property on which it was situated.

ROBERT KEE,
Secretary.

CARADOC.

SECRETARY'S REPORT.

I beg to report that there have been nine cases of malaria fever, four cases of typhoid fever, three of which proved fatal, and one case of diphtheria, which proved fatal, within the township during the year. The case of diphtheria was caused by the house in which it occurred having been improperly disinfected when that disease was present in it on a former occasion. The house has since been properly disinfected. The township is free from epidemic and contagious diseases at the present time.

M. McGUGAN,
Secretary.

DUMFRIES, SOUTH.

MEDICAL HEALTH OFFICER'S REPORT.

I am glad to say that at present the health of the township is good, During the last few months, we have had some cases of typhoid fever, only one terminating fatally. Two or three of them were near the Grand River, and we may ascribe the cause to the lowness of the water. The remaining cases were in the village of St. George and vicinity, arising chiefly from impure drinking water, for after an examination of a large number of wells I found the majority unfit for drinking purposes. I believe if the wells in this village had not had proper attention this season, an epidemic would have been inevitable. There have been a few cases of measles, but they were confined to one or two families. Four cases of scarlet fever occurred, but by a strict quarantine was kept from spreading and confined to one family. The public schools have all been inspected and found in a fair sanitary condition.

E. C. KITCHEN, M.D.,
Medical Health Officer.

MALDEN.

MEDICAL HEALTH OFFICER'S REPORT.

During the past year there have been no serious epidemics in the township. What might have been the beginning of an epidemic of diphtheria was, by the efforts of the Board, confined to the first house and to one child in the house. He was brought on a visit with his parents. The child was isolated, and none allowed to visit the place, and every sanitary measure carried out.

We have good cause for thankfulness because of the satisfactory sanitary condition of the township, and from the almost total immunity from diseases of an infectious or contagious character which we have enjoyed throughout the year.

T. JAMES PARK, M.D.,
Medical Health Officer.

CROWLAND.

MEDICAL HEALTH OFFICER'S REPORT.

This municipality is to be congratulated on the almost complete immunity from contagious or infectious diseases.

A very few cases of diphtheria, and so far as I can learn, 3 or 4 of scarlet fever complete the list of those dreadful diseases which but a few years ago brought such sadness to the homes of so many in the township.

I also note that the prejudice many people had against the posting of cards where contagious disease existed, is rapidly dying out and a desire to have the Act faithfully administered is now much more general.

J. W. SCHOOLEY, M.D.,
Medical Health Officer.

PERCY.

MEDICAL HEALTH OFFICER'S REPORT.

During this year there have been no diseases which required the attention of our Board or of the medical health officer. There have been one or two mild cases of typhoid fever and a few of a malarial type, none of which proved fatal.

During the month of May there was prevalent a form of bronchical trouble, which was apparently contagious. There was also a slight epidemic of roseola among children. Beyond the few cases enumerated above the health of the township has been exceptionally good.

J. M. CLEMINSON, M.D.,
Medical Health Officer.

PUSLINCH.

SANITARY INSPECTOR'S REPORT.

It is not necessary to give in detail all that was done during the current year, especially as the work was much on the same line as in previous years. Suffice it to say that during the month of May, and again in October, I visited all the villages in the township, and inspected every yard, etc., connected with the houses of the villagers, all slaughter-

houses, and school properties, including wells and water closets connected with the latter. All complaints of nuisances were promptly attended to and satisfactorily disposed of. During the early part of winter there were a few cases of whooping-cough in S. S. No. 5. One child fell a victim to the disease. The school was not closed but children from infected families were prohibited from attending. Again in October there were six cases of diphtheria in Morriston, all of which recovered. It is difficult to account for the cause of the first case. Dr. Howitt and myself did all that we possibly could to prevent its further spread. With these exceptions the sanitary condition of the township has been very satisfactory.

ANDREW MUNRO.
Sanitary Inspector.

PORTLAND.

MEDICAL HEALTH OFFICER'S REPORT.

The general health of the township is good at the present time.

During the past year we had an outbreak of diphtheria. The usual precautions were taken and it was confined to two families. One of these cases proved fatal, There were a few cases of typhoid fever, one of which proved fatal, the others were of a mild type.

The township has not been visited by any widespread cause of death or sickness beyond the ordinary causes. There were no cases of scarlet fever, measles, mumps or whooping-cough reported.

E. McLAUGHLIN, M.D.
Medical Health Officer.

PELHAM.

SECRETARY'S REPORT.

The secretary was instructed to mail copies of a circular, printed and distributed last year, again this year to each physician practising in the township, and to each public school teacher therein, asking their co-operation with the Board to prevent the spread of contagious diseases, as well as a general observance of the health regulations.

There were less reports by physicians to the secretary than in former years.

In May Dr. Birdsall reported two cases of mild scarlatina, both in one family, the mother and eleven year old daughter. He caused the house to be placarded and cautioned the family to remain at home. Both recovered.

In October Dr. Emmett reported a case of scarlet fever and a case of diphtheria in the families of two farmers whose farms were adjacent to each other. He caused both houses to be placarded, think both recovered ; although neither he nor Dr. Birdsall sent in reports of death or recovery.

In October Dr. Leitch, of St. Catharines, reported a case of typhoid fever, contracted by bad water, no report was received, but think patient recovered. Common report had it that there were a number of cases of typhoid fever in the same locality, (the north-east part of the township adjoining the township of Louth), but no other cases were reported by physicians to this Board. In November, however, the Local Board of Louth township, above referred to, by letter drew the attention of the Pelham Board to the prevalence of typhoid fever in the north-east part of Pelham—being the locality above referred to. Dr. Comfort, medical health officer of Pelham, thereupon visited the said locality and found a number of cases, most of them in the township of

Louth. He reported verbally to this Board that the one or two cases in Pelham were doing well and could safely be left to the physicians in charge. The newspapers at this time reported a very heavy mortality among adults from this disease in the locality referred to, (the border of Pelham and Louth), but no other cases were reported to this Board.

Two deaths in same locality were reported to the undersigned as Division Registrar, one by Dr. Downey, of St. Catharines, an adult male 24 years old, from typhoid fever and the other by Dr. Jessup, of St. Catharines, a married man 31 years old, from typhoid pneumonia.

Three complaints of dead horses, as nusiances, were made during the year. In each case the sanitary inspector was notified, and that officer took such steps as he deemed necessary to remove the nuisances.

J. C. CROW,
Secretary.

PROTON.

SECRETARY'S REPORT.

I beg to report that the Local Board of Health, township of Proton, since our meeting for organization, and detailing our members to the several divisions for sanitary purposes, have not been called upon to act in any urgent case of sickness this year. We had our medical inspector, Dr. Jas. McWilliams, to inspect two schools in which it was reported that contagious disease affected some of the pupils. Only two pupils were found to be so affected, and they were excluded until healed. No other occurrence of disease requiring our active interference has developed in the present year. I am happy to state that the general health of our people has been unusually good.

JAS. CAVANAGH,
Secretary.

PLYMPTON.

SECRETARY'S REPORT.

I have to report to you that there has been no epidemic reported by the medical health officer to the Board. The township has been free from all disease, and the only complaint of any kind was of a bad smell from a cheese factory, the proprietor of which at once abated the nuisance on the order of the medical officer.

T. R. K. SCOTT,
Secretary.

RYDE.

SECRETARY'S REPORT.

I have the honor to report that during the present year this township has been remarkably free from contagious diseases, not a single case having been reported, consequently the Board, who were duly appointed, have not been called upon to meet.

W. TINGEY,
Secretary.

RADCLIFFE AND RAGLAN.

SECRETARY'S REPORT.

Early in the spring there were a few cases of measles of a mild type, with this exception the municipality has been free from contagious and infectious diseases.

There has been a marked improvement in the health of the village of Combermere since the Madawaska Lumber & Driving Co. have lowered their dam at the head of the Palmer Rapids on the Madawaska River. The dam was lowered last winter.

J. E. H. MILLER,
Secretary.

REACH.

SECRETARY'S REPORT.

I have much pleasure in being able to report the continued healthy state of the municipality, there having been only one case of diphtheria reported to me during the year. It was not necessary to call the Board of Health together during the year. The sanitary measures introduced by the Board at its organization, and the willing co-operation of the inhabitants generally to comply with the instruction of the Board, have no doubt been the great factor in producing the above result.

WM. SPENCE,
Secretary.

RALEIGH.

SECRETARY'S REPORT.

The reports of the medical health officer shew the sanitary condition of the municipality to be in a satisfactory state. But I would direct your attention to the small percentage of successful vaccinations as shewn by the health officer's report. The total number vaccinated was 558, out of which only 75 was successful, I cannot say what vaccine was used, it having been supplied by the officer, but as none of those operated on shewed marks of previous successful vaccination this seems unsatisfactory. The total cost to the municipality $116.60, or $1.55 for each child successfully vaccinated.

Three meetings of the Board have been held since last report, but no complaints as to nuisances or other matters have this year been made.

No reports have been made to the Board by medical practitioners regarding contagious diseases.

J. G. STEWART,
Secretary.

RYERSON.

SECRETARY'S REPORT.

I have pleasure in reporting that the Local Board of Health, although ready to enforce the requirements of the Health Act when needed, has not been called upon to do so this year, with the exception of ordering the burying of one carcass. There have been no cases of infectious or contagious diseases so far as is known to the Board. In fact,

the sum and substance of our annual reports since the Local Board was formed here (in 1884) have been that the health of the township has been exceptionally good. The Board has held two meetings this year and reports that the township generally is in a good sanitary condition. There have been only two deaths during the year out of a population of about 700, and these were not caused by any contagious or infectious diseases. Take it all through this is one of the healthiest localities in Ontario.

EDWARD GEDDES,
Secretary.

ROCHESTER.

CHAIRMAN'S REPORT.

The Local Board has not experienced the least trouble in carrying out the provisions of the Public Heelth Act, as the residents of this township have at all times shown a cordial disposition to carry out whatever orders and suggestions the Board was called upon to make. The sanitary condition of the township is good, also the health of the inhabitants is in a very good condition notwithstanding the unusual scarcity of water throughout the whole township.

Diphtheria has broken out two or three times, but owing to the manner in which the cases were watched and the houses placarded and so kept by our Medical Health Officer, the disease was strictly confined to one or two houses at each time. There were two deaths.

The Board at present is in good working order and is using its best efforts in the cause of public health.

PETER COTTER,
Chairman.

RAINHAM.

MEDICAL HEALTH OFFICER'S REPORT.

We are happy to be able to state that nothing of special interest has come under our observation. No diseases of an epidemic character have prevailed save two cases of diphtheria, one of which proved fatal. By care and prompt enforcement of sanitary measures we were enabled to confine the disease to one family. Unfortunately a rumor was circulated that a case of smallpox was in our township, but upon enquiry said report was found to be untrue. Nevertheless, we were called upon by the Provincial Board of Health to see that immediate steps were taken to enforce vaccination, but regret to report that a small percentage of the inhabitants complied with the requirements of the Act. I might here suggest, that in my opinion based upon observation, that all compulsory vaccination should be performed free to the parties vaccinated, the council of the township assuming all responsibility for the same, thus leaving the inhabitants no plea for non-compliance.

J. FRY, M.D.,
Medical Health Officer.

RICHMOND.

SECRETARY'S REPORT.

In presenting this my annual report of the work of the Board of Health for this municipality for the current year I have very great pleasure in stating that in consequence of the almost entire absence of contagion and the general healthy state of the township the duties of the Board were rendered comparatively light. The Board held

three meetings during the year. At a meeting in April the usual notices were ordered to be posted up throughout the principal villages of the municipality calling attention to the cleaning of premises and the removal of all garbage or other deposits endangering the public health, which, under the supervision of the Board, were well observed and thoroughly carried into effect and the township placed in a satisfactory sanitary condition. There were four isolated cases of diphtheria during the year, one of which proved fatal, but the Board was not called upon for any assistance as the relatives took every precaution to prevent it from spreading, in which they were successful. There were no reports as to the violation of the Act during the year, which is very gratifying. We do not claim that the happy state of affairs is directly attributable to the labors of this Board but rather to the good sense of the people who read of the doctrines and philosophy of the laws of health. We commend those in authority for their endeavor to keep before the minds of the people the close connection that exists between people's health, care and cleanliness.

ABRAM WINTERS,
Secretary.

SCOTT.

MEDICAL HEALTH OFFICER'S REPORT.

There were several cases of scarlet fever in June and also in October; none were fatal to my knowledge. There were also several cases of typhoid fever in August, September and October; one was fatal. One case was imported from Toronto, so the cause was not chargeable to the sanitary condition of this district. A few cases of diphtheria were found in different parts; none were fatal to my knowledge. Also a few cases of malarial fever were found but none fatal. Houses were placarded and proper precautions taken to stop the spread of disease in all cases.

The Board of Health is a standing organization in this township and its members are all anxious to promote the sanitary condition of the district in every way.

W. ARMSTRONG, M.D.,
Medical Health Officer.

STAMFORD.

MEDICAL HEALTH OFFICER'S REPORT.

A very healthy season has been the general sentiment of the fraternity. Nevertheless, there have been a few exceptions.

During the winter and spring an epidemic of whooping-cough prevailed, from which few escaped, with two or three deaths of very young infants.

That of whooping-cough was followed closely by an epidemic of measles, similarly sweeping in its course, generally severe while it lasted, but no fatal cases occurred. It was usually accompanied with a great deal of bronchial trouble and delirium.

Scarlet fever broke out in one house; there were three cases, all of which recovered. As the family was quarantined it has so far spread to no others.

I notified the inspector to examine the cow-byres, which he has done.

I also requested him to require the different school sections to have the water-closets in connection with each emptied during the summer holidays, which he said he did.

JOHN M. DEE, M.D.,
Medical Health Officer.

SYDENHAM.

MEDICAL HEALTH OFFICER'S REPORT.

In making out my report for the present year I have much pleasure in stating that although our township has been visited by a number of epidemics, yet the death-rate from them has been remarkably low.

During the former part of the year an epidemic known as German measles broke out amongst us and seemed to spread rapidly, but, being of a mild type, little effort was made to check it, and few even applied for medical advice. As far as known to me no deaths occurred from it. At present I know of no cases in the neighborhood. This epidemic was traceable to Owen Sound as well as another which came about the same time and known as cynanchi parotidie, or mumps.

It, too, seemed of a mild type, yet there was one peculiarity about it, and that was a strong tendency to leave the neck and pass down to the testicle in the male; still I know of no serious consequence remaining.

The next we had to contend with was a case of diphtheria. It, too, originated in Owen Sound. The house was strictly isolated and every precaution used to prevent its spreading. It proved very stubborn, but after a time yielded to treatment. The patient recovered and no fresh cases followed.

During the hot summer season there were quite a number of cases of diarrhœa. All, so far as known, recovered, with the exception of two cases.

At present I know of no epidemic in the township nor anything requiring the attention of this Board.

A. C. SLOANE, M.D.,
Medical Health Officer.

SHERBROOKE.

SECRETARY'S REPORT.

I beg leave to state that the sanitary condition of the township has been good and the general health of the people unexceptional. There have been no contagious diseases. Only three deaths recorded so far—one of old age, one of heart disease, and one of meningitis.

WM. CHALMERS.
Secretary.

SENECA.

MEDICAL HEALTH OFFICER'S REPORT.

In submitting my report as medical health officer for the township of Seneca I have the honor to say that the condition of the township for the past year has been fairly satisfactory. There are a few of the ale and milk premises in Indiana that might be cleaner, but they are more eyesores than causes of disease. The health of the township has been good and the death-rate low. There have been no epidemics of any kind, nor has there been any cases of contagious or infectious diseases reported.

ROBT. H. DAVIS,
Medical Health Officer.

SALTFLEET.

MEDICAL HEALTH OFFICER'S REPORT.

The township during the past year has been free from epidemics of a serious nature. A few isolated cases of diphtheria, typhoid and scarlet fever have occurred, but they were promptly attended to and measures taken to prevent the spread of the said diseases, which measures fortunately proved successful, and the diseases were confined to their original starting points.

Neglect has been shown in promptly reporting cases of contagion and much improvement is required in this respect.

It is desirable that more complete measures should be adopted to secure general vaccination of the pupils attending public schools. A more thorough system of sanitary inspection of the schools should be made and a more general and prompt report of all contagious diseases to the Board should be made.

Measures have been adopted during the past year to correct unsanitary conditions as they have been brought to our notice.

During the past year several nuisances have existed in the municipality, but they were promptly removed.

At present the sanitary condition of the township is good.

A. C. JONES, M.D.,
Medical Health Officer.

SCUGOG.

SECRETARY'S REPORT.

I have much pleasure in reporting a very healthy year in the township of Scugog There has not been a case of sickness of any kind reported during the year, and I am not aware of there having been a single case of contagious or infectious disease in the township during the period mentioned.

JOHN FOY,
Secretary.

SULLIVAN.

MEDICAL HEALTH OFFICER'S REPORT.

In presenting my annual report, it gives me pleasure to state that the sanitary condition of the township of Sullivan has been exceptionally good, its water supply and drainage helping materially to this end. During the early part of the year an epidemic of measles occurred; but no cases of diphtheria, scarlet fever, or typhoid have been reported to our board during the year. The death-rate has been very low. The different school-houses and privies in connection therewith, throughout the township received attention during the summer vacation, thus tending materially to the health and comfort of the pupils in attendance. A few cases of nuisances were reported, but they were of a trivial nature. The efforts of the board seem to be appreciated by the public.

GEORGE J. DICKISON, M.D.,
Medical Health Officer.

SOUTHWOLD.

SECRETARY'S REPORT.

I regret that my annual report is not as favorable as that of last year. No doubt, you are well aware of the smallpox epidemic which prevailed to a certain extent in Southwold during the months of February, March, and the forepart of April last, which was at first pronounced by the local physicians chicken-pox. Hence, it gained a strong footing before the Board of Health were in a position to take action; but when the disease was pronounced smallpox by outside physicians, the Board of Health went to work with a will and confined it to the families in which it then existed, twelve in all. Forty-three cases were reported, with thirteen deaths. Section 15, of the Act respecting vaccination was proclaimed in force by the Reeve, and J. H. Howell, M.D., was employed to vaccinate in all the school sections on given days, besides other local physicians vaccinating many people. From the best information that I can obtain, there are but very few persons in this municipality who have not been vaccinated. This had much to do with checking the disease. Dr. J. H. Howell was appointed medical health officer, which duty he faithfully performed during the epidemic. All churches and schools were closed for three months, and all public gatherings strictly forbidden; and every precaution the board could think of was taken to check the spread of the disease, such as a strict quarantine of the families afflicted.

I have also to report that there were a large number of cases of malaria in this municipality during the months of August and September, in many instances very severe; but no deaths occurred from it and now it has disappeared. The cause of so much malaria was assigned to the heavy falls of rain in the month of June last, which caused the wells to fill up with surface water, and to the dry season following. Sanitary work was attended to by the Board, such as inspection of slaughter-houses, cheese factories, pig pens, school premises, and school-houses. There were no complaints made to the Board during the present year of any existing nuisances. There was one thing fully demonstrated here during the smallpox epidemic and that was, that it requires men of pluck and courage for members of a Board of Health during epidemics such as smallpox. There were only threemembers of the Southwold Board of Health that came to the front and did their duty like soldiers. Two members of said Board failed to put in an appearance during the whole time, absenting themselves from duty, and at the first meeting of the municipal council they were promptly dismissed and two appointed in their stead as members of said Board of Health. There were no cases of typhoid, diphtheria, or scarlet fever reported to the Board in this municipality during the present year.

M. CAMPBELL,
Secretary.

SANDWICH, EAST.

MEDICAL HEALTH OFFICER'S REPORT.

I beg leave to make my report to you personally as I have an important matter to draw your attention to. In obedience to the statute with regard to isolating of contagious diseases, our efficient clerk, Mr. John Deyal, notified all medical men practising in the township, that houses in which any of the contagious diseases existed must be placarded and the family isolated as far as possible from the general public. Some physicians acted according to the law, others did not, although notified, as well as having a copy of the Act sent to them, warning them of the penalty attached to an infringement of the law. In my opinion, the Provincial Board should act in the matter and notify and warn in an especial manner all medical men of the law in such cases. If the law had been observed there would have been fewer cases of diphtheria in the township.

Pardon my taking the liberty of referring the matter directly to you. I do it in the interests of the public health.

H. R. CASGRAIN, M.D,
Medical Health Officer.

SAUGEEN.

MEDICAL HEALTH OFFICER'S REPORT.

The public health of this township during the past year has been exceptionally good, no cases of contagious or infectious diseases having come to my knowledge, so that the Board of Health organized and ready for duty have had but little to do. No case of nuisance has had to be dealt with.

CHAS. SHUPE,
Medical Health Officer.

ST. JOSEPH.

MEDICAL HEALTH OFFICER'S REPORT.

This township is free from epidemic disease just now; but during the year we had an outbreak of diphtheria. In April there were four cases at Cole's, of which two died. Two children of William McNabb took diphtheria on 12th of April, and both got well. May 28th, a child of Archy Wilson's took diphtheria and died. Between July 27th and August 9th, six of Joseph Smedley's family took sick with diphtheria, and three of them died, one aged six years, one four, and the other two. These premises were all fumigated, and I am happy to state that there does not seem to be any fear of further danger.

H. M. ROSS,
Medical Health Officer.

STEPHEN.

SECRETARY'S REPORT.

I would reply that our municipality up to the present has been comparatively free from any contagious disease, the only case was one of typhoid fever in the village of Crediton. That was supposed to be owing to an outlet of the main drain running through the village at that particular place. Attention was at once called to the Crediton affair, the Board met and discussed the matter. A deputation was appointed to investigate and take such steps as might appear necessary. The nuisance was removed and health restored. This, I believe, was the only case of contagious disease during the year. The officers of the Board are very attentive to their duties, in fact, the whole Board is much interested in the carrying out of sanitary measures much more so than formerly.

C. PROUTY,
Secretary.

TUCKERSMITH.

MEDICAL HEALTH OFFICER'S REPORT.

The general sanitary condition of the municipality throughout the year, I consider has been good. In the early part of the year, I was advised of two cases of typhoid fever having appeared in the municipality; this information I received through the Local Board of Health, thereby showing the interest taken by said Board.

A meeting of the Board was called with a view of investigating the matter; and I am of opinion that the information obtained at said meeting, particularly that given by the attending physician is evidence of impure drinking water being the cause of the trouble. One of the cases recovered the other died. The family was isolated, etc., and no other case appeared.

Later in the year I was asked to visit one of the schools (No. 8), in which it was reported that some of the pupils had measles. I did so, and found only one case of what is commonly known as German measles. Some five or six other cases, I understand, had occurred in the vicinity, all of which recovered.

Still later in the year diphtheria was reported to be in the school No. 9. I visited said school, but owing to the pupils hearing of my coming only a few children were in attendance. I found no diphtheria; but previous to my coming home visited two persons in the neighborhood who were supposed to have it. I carefully examined the cases and though I have known physicians to pronounce similar cases diphtheria, I am of the opinion they would properly be called *follicular pharyngitis*. The four or five cases that occured all recovered. The school was closed for a week and underwent a thorough cleaning, which I considered advantageous under any circumstances.

I am pleased to be able to say that a much greater interest has been manifested by the people themselves in carrying out the provisions of the Health Act.

J. G. SCOTT, M.D.,
Medical Health Officer.

TORONTO.

SECRETARY'S REPORT.

The work of the Board this year was very light, the township has been in a fair sanitary condition. Two or three cases of diphtheria and typhoid; but I have not heard of any deaths caused by them. Otherwise the general health of the township has been good.

J. EAKINS,
Secretary.

TURNBERRY.

MEDICAL HEALTH OFFICER'S REPORT.

The sanitary condition of the township is good, and the general health during the year has been very satisfactory. Within the past twelve months I have received no notice of any cases of infectious or contagious diseases; and I only know of one or two sporadic cases of typhoid occurring in the township. For several years there has been an epidemic of scabies, affecting hundreds of persons; but I am satisfied that there are now very few cases of this disease to be found. No complaints have been made to me by any of the medical practitioners of the township, or others—in reference to any subject relating to the public health. There has been very material improvement in the general sanitation of the township, especially in regard to the mill dams between the municipalities of Wingham and Turnberry. This, with the low rate of mortality, and the general good health ought to be a cause of thankfulness.

W. B. FOWLER, M.D.,
Medical Health Officer.

THOROLD.

MEDICAL HEALTH OFFICER'S REPORT.

This municipality, over which I have the honor to hold jurisdiction as medical been made by Mr. Wilson, the Reeve and myself as sanitary inspectors, and in all cases health officer, has been remarkably free from any epidemic or contagious disease. The usual necessary visits of inspection to such institutions as require our attention have where we found reform necessary our suggestions have been promptly and properly complied with.

H. PARK, M.D.,
Medical Health Officer.

USBORNE.

MEDICAL HEALTH OFFICER'S REPORT.

It gives me great pleasure, in presenting my annual report, to state that the health of the township has, for the past year, been exceptionally good. We have been almost exempt from those infectious and contagious diseases of a virulent character. Diphtheria has been conspicuous by its total absence.

Scarlet fever made its appearance in one family in the Woodham section. I had the house and inmates isolated, and every precaution taken to prevent its spread. The children not affected were sent to a house where there were no other children and proper care taken. Four members of the family, including the mother, suffered from an attack; all recovered. They were kept at home for six weeks after all fever had left. All clothing was thoroughly washed and disinfected, and the house was thoroughly washed and fumigated. By prompt attention this dangerous disease was confined to one family.

In connection with this case I might mention a similar outbreak of this disease which occurred in McEntyre's section, township of Blanchard. The presence of the disease was not reported until some seven or eight families were affected. When we became aware of the outbreak we held a meeting; the result was we isolated all the dwellings affected and had the school closed for such time as might be considered safe against a re-outbreak of the fever. The measures we here adopted proved effectual, as no further spread of it took place. This outbreak might have been confined to fewer, possibly one family, had the health officer been notified of the first outbreak. Fortunately such negligence was followed by no loss of life.

Rothebu, or German measles, made its appearance during the summer. It is not so contagious as measles proper, nor yet so dangerous.

Whooping-cough was somewhat prevalent in part of the township. This is called a children's disease, and by too many looked upon as a very innocent trouble. The result of this mistaken idea was three deaths. Only a children's disease, the mother says, as the affected children ask if they may go to the picnic, and as the day is fine she consents. Another mother, because the day is propitious, takes her angel babe of three or four weeks to the soiree also, and coming in contact with the children's disease the poor mother very soon sorrows over the fact that her babe is now an angel. Children with whooping-cough should be isolated from all others until they have perfectly recovered.

Typhoid fever entered at least four families in the municipality this year. There were four cases and one death. One case was imported from Muskoka; one occurred in a house whose drain had its terminus in a frog pond which had been for some time dry. The origin of the other two I did not learn. It gives me pleasure to notice that the secretary notified the trustees to attend to the sanitary condition of the school houses. The sanitary inspector visited the Woodham Hotel, which has an unhealthy hole under part of it. He ordered it to be drained. He also visited a slaughter house whose unhealthy odor has been the cause of numerous complaints during the summer. We

hope his visit may result in putting an end to the nuisance. I would recommend that our Board follow the Health Act, and allow no slaughter house without the owner first obtaining a permit from the Board. Cheese factories and dairies should also be supervised by the Board. Again I would direct the attention of our Board to the unarmed state we are in should we have to contend against an invasion of smallpox, and I would urge that previous recommendations regarding vaccination be carried out.

If we had four meetings in the year in various parts of the township, and collect such information in these quarters as would enable us to form an estimate of the sanitary condition of these localities, we would thus stir up an interest in the community which would greatly tend to promote the better health and sanitary condition of our township.

W. IRVING, M.D.,
Medical Health Officer.

VESPRA.

SECRETARY'S REPORT.

I have much pleasure in reporting that the general health of the township has been good. There have been three cases of typhoid and one of scarlet fever reported, none of them fatal. By prompt precautions being taken the spread of the disease in each case was prevented.

Through the action of the sanitary officer several nuisances, which in all probability would have caused disease and death, have been abated.

A case of typhoid has just been reported by Dr. Allen, which he believes to have its origin in a pool of stagnant water in the neighborhood. The sanitary officer was at once directed by the Board of Health to take steps to have the nuisance removed.

GEO. SNEATH,
Secretary.

WATT.

SECRETARY'S REPORT.

I have great pleasure in stating that the duties of the Local Board have been very light. The health of the township during the past year has been good, no cases of infectious diseases having been reported to the Board.

HENRY W. GILL,
Secretary.

WAWANOSH, WEST.

MEDICAL HEALTH OFFICER'S REPORT.

In handing in my report of this township there is nothing of any kind worthy of special mention, no complaints having been made during the year. An epidemic of diphtheria in the village of Auburn, and a few cases in township outside of village, in all twenty-nine cases, with two deaths, occurred in January. Besides this no other contagious diseases have been reported. The year has been one with very little sickness.

D. M. GORDON, M.D.,
Medical Health Officer.

WILLOUGHBY.

CHAIRMAN'S REPORT.

We are much pleased to report that the sanitary condition of the township has been very satisfactory during the past year. There have been no contagious diseases brought to our notice. The healthy condition of the township has made our labors very light.

Our Board of Health, however, were asked for and strongly recommended by the medical health officer, to procure placards to put on houses where contagious diseases exist, and instructed the secretary to have the above cards printed.

GEORGE WEAVER,
Chairman.

WAWANOSH, EAST.

MEDICAL HEALTH OFFICER'S REPORT.

In conformity with the Health Act, I have to state that the condition of the public health within the municipality has been fairly up to the average during the paat year.

In the southern part of the township there were a number of cases of diphtheria in the early part of the year, fortunately of a mild character.

We have had rather more than the usual number of cases of sporadic dysentery, which have generally been amenable to treatment.

The Board of Health is properly organized, but no complaints have been made to it during the year, and no necessity has arisen for its active interference, which certainly should be matters of thankfulness to all concerned.

WM. SLOAN, M.D.,
Medical Health Officer.

WALLACE.

MEDICAL HEALTH OFFICER'S REPORT.

The general health of the inhabitants of the district under my care has, on the whole, been good, one thing particularly noticeable being the absence, so far as my knowledge goes, of the ordinary amount of summer diarrhœa, and in consequence mortality amongst children was very light.

About half a dozen of isolated cases of diphtheria were reported, there being only one case in each house affected. The ordinary isolation and disinfection were practised and the premises placarded without the opposition formerly manifested.

There have not been any cases of any other infectious or contagious diseases reported officially, nor have there been any, to my knowledge, except a few light cases of whooping-cough, terminating favorably.

I have pleasure in again being able to report the absence of public nuisances of any kind.

Vaccination has not been performed as a public protection. I would again urge on our Board the advisability of a general vaccination of all children of school age who do not show the unmistakable marks of a previous successful vaccination. Many children have gone through the operation, but so far as being any protection from smallpox it is merely useless, at the same time the child is exposed to the danger of having some skin disease communicated by the use of vaccine from unhealthy children.

A few cases of malarial fever are generally supposed to exist through the township, owing to the lack of as complete a system of drainage as is desirable, but I am pleased to be able to report a decided improvement in drainage during the last year.

J. STANDISH, M.D.,
Medical Health Officer.

WILLOUGHBY.

MEDICAL HEALTH OFFICER'S REPORT.

In submitting my annual report I am pleased to say that the township is in a comparatively good sanitary condition. Although there have been a number of cases of diphtheria and typhoid fever, yet, considering the prevalence of those diseases in neighboring townships, I think we may consider ourselves very fortunate. The cases of which I have spoken were not of a very virulent type, all ending in recovery. I have noticed a few places in which water stands during a great portion of the summer, and have urged the parties, on whose farms such places were found, to fill up, or more properly drain them, to which they assented. When those places are properly attended to, I will consider our township, cemparable to, if not better, than any other in the Niagara peninsula from a sanitary standpoint.

M. L. COLLVER, M.D.,
Medical Health Officer.

WHITBY, EAST.

SECRETARY'S REPORT.

This township is noted for its healthy climate : the southern part being tempered by the balmy breezes off Lake Ontario, and the northern part lying as it does on the height of land between Lake Ontario and the Northern lakes, is abundantly supplied with an almost mountain air which makes the climate an invigorating one.

During the earlier part of the year we had the usual number of isolated cases of contagious diseases, which the Board did not deem it necessary to interfere with ; but during the month of November an epidemic of diphtheria of somewhat serious nature broke out in the village of Cedar Dale. One family lost three children, and other families were stricken down with the disease.

The Board met and took prompt action, appointed a sanitary inspector and gave instructions to cause to be removed all pig-pens to a distance of at least seventy feet from any dwelling—to placard all dwellings where the disease existed and to use other means in his power to prevent the spread of the disease.

The board also recommended that the village school be closed for a period of at least two weeks. This recommendation was complied with by the school board. These measures effectually put a stop to the spread of the disease and it has been stamped out.

WILLIAM PURVIS,
Secretary.

WOOLWICH.

MEDICAL HEALTH OFFICER'S REPORT

By direction of our Board of Health, I have during the past summer visited all the slaughter houses, meat markets, creameries, cheese and glue factories, and also the school in the township, having first issued the usual notice that I would do so. Things generally were in fair condition as regards the thirteen school houses, sanitary matters had received more attention this year than last. In every case the school house itself had been cleaned during vacation. In six outside buildings had received a thorough overhauling, one section having built new and improved water closets, which should be an example to the others. I wrote to the trustees of the other seven, and as far as I can learn matters were at once put right.

As nearly every household sends one or more children to school, and as children drink more water during the six hours they are at school than during the other eighteen, and though the water at their homes may be good, if foul at school the whole community must suffer. I gave therefore particular attention to the wells. Of the thirteen schools, ten had wells, one of these went dry sometimes, and the water was not very good at any time. Another had some dead thing in it, but fortunately there was a very good spring a few yards from the school grounds, and the well was to be cleaned at once. At another the water did not suit the trustees and they were boring a new one. A fourth had a good well of water but no pump, while a fifth though well and pump were all right yet the children drank from pails. The other five were all that could be desired. Of the three schools remaining two had no wells, and one a dry well, water being procured in pails from neighboring wells which might sometimes be a very successful plan for spreading diphtheria or scarlet fever through the school and section.

The health of the township has been very good. A few cases of diphtheria and no deaths. Some typhoid with one death, and two deaths from consumption.

W. J. PASSMORE, M.D.,
Medical Health Officer.

WAINFLEET.

MEDICAL HEALTH OFFICER'S REPORT.

What might have been an epidemic of diphtheria started in the eastern part of the township on the bank of the Welland River, two of the family died of it; at this stage the board of health took charge of the matter, and with the best results, no more deaths occuring, and the disease confined to those already attacked. In another part scarlet fever sprung up being brought from Fort Erie. In this instance also it was stamped out by being confined to those first attacked. The people do not object to have their dwellings placarded as they used to; they look upon it now as necessary and for the public good, and are awaking to the fact that the board of health is a useful institution.

During the summer a young man from this village working in Buffalo was seized with smallpox, before leaving for the pest house he packed up all his clothes in his trunks. After he died word was sent to his friends here to come and get them. By chance it came to be known to the Board that a party had gone for the clothing, by prompt action on the part of the Board the clothes were intercepted and kept out of the country. Thus what would certainly have been a dire calamity in our midst was prevented by the watchfulness of the Board.

During August and September enteric diseases overspread the township, the young and adults all recovered from them, but of those attacked in old age not a few succumbed. There have been no other epedimic or dangerous diseases during the year, and at the present time the township is comparatively healthy.

W. B. HOPKINS, M.D.,
Medical Health Officer.

WESTON.

CHAIRMAN'S REPORT.

I am pleased to state that our village has enjoyed perfect immunity from any form of epidemic disease during the year, and has been in other respects exceptionally healthy.

JOHN BROWN,
Chairman.

WILMOT.

MEDICAL HEALTH OFFICER'S REPORT.

It affords me much pleasure to state that our municipality has been free from any serious epidemic during the current year.

A number of cases of typhoid fever have occurred throughout the township, but scattered. Generally the origin of such isolated cases is difficult to trace. In one family where three cases occurred I fully believe the fever originated in impure water.

Diphtheria has also occurred to a considerable extent in the village of Baden, but it has been of a mild type, and no deaths have been caused by it.

I may call your attention to investigations now going on in Germany and England as to the part played by butcher's meat in causing consumption (tuberculosis). This disease is now absolutely known to be caused by living parasites (baccillii) which destroy the lungs and other tissues by feeding on them. Cows and other lower animals frequently suffer from this disease as well as man, and the flesh of such diseased animals when eaten can, and frequently does, communicate consumption to the human species. Even prolonged exposure to the heat in cooking does not destroy the vitality of such organisms which when eaten gives rise to that dread disease. To what extent practical results will accrue from these facts, belongs to the future.

Again I must protest against the use of privy pits in villages and small towns. The dry earth system should be used in the absence of sewers, also the proximity of outhouses, pig-styes and stables, to drinking wells.

W. R. NICHOLS, M.D.,
Medical Health Officer.

WOLLASTON.

SECRETARY'S REPORT.

There has not been a case of contagious disease reported within the limits of the municipality.

That with the exception of organizing in the spring, the local board of health has had no call to perform any duty whatever.

That to the best of our knowledge and belief the township is in excellent sanitary condition.

A. HERBERT WANE.
Secretary.

WILLIAMSBURG.

MEDICAL HEALTH OFFICER'S REPORT.

In submitting this report to you for the current year I am more than pleased with the effect of the law that was passed by the Legislature of Ontario for the preventing of diseases. The township of Williamsburg was never in a better sanitary condition than it is at present. The malignant contagious diseases are few and far between. I have only to report two cases of typhoid malaria produced and caused by impure drinking water. Zymotic fevers none. The rate of mortality has been very low compared with last year and the year before. The most difficulty has been with factories, especially those making cheese. The factories last season were in an unsanitary condition. This year I notified all proprietors of such factories to take hold of the sanitary law. I visited all the factories in the townsnip of Williamsburg and the result was we had clean work

J. J. LANE, M.D.,
Medical Health Officer.

WHITCHURCH.

SECRETARY'S REPORT.

We feel grateful to be able to report that the inhabitants of the township of Whitchurch in the county of York, have not been seriously visited with contagious diseases during the present year.

There have of course been isolated cases of diptheria, scarlet fever and children's diseases, and on enquiry we learned that those in attendance used every precaution to prevent the diseases from spreading.

J. C. LUNDY,
Secretary.

WELLESLEY.

MEDICAL HEALTH OFFICER'S REPORT.

It is again my agreeable privilege to report favorably on the satisfactory operation of the Public Health Act. There have been but few complaints made, and of these few some were of a rather trivial nature ; but even these latter go to show that the public are beginning to appreciate the objects for which the law was instituted. The five slaughter houses in the township have all been inspected—some of them more than once—and suggestions as to proper sanitation have in all cases been cheerfullly complied with. The rules touching the care of pig-styes, privies and wells are becoming more thoroughly understood ; and though there still are—and doubtless will be for some time to come—glaring cases of delinquency, I am pleased to be able to note a marked improvement in this respect over last year. So far as diseases of the kind, coming under the supervision of the Board are concerned, the township has enjoyed a most gratifying immunity during the past twelve months. Typho-malarial fever has to some extent prevailed in parts of the township during the present antumn, but generally of a mild type, and no fatal cases have been reported. The summer passed without giving us anything like the average proportion of summer complaints, and what we have encountered were mild and in no instance fatal. Diphtheria and scarlet fever have been conspicuous by their absence. There are at present a few cases of whooping-cough of a light character, and without complications.

I must not omit to remark on the remarkable beneficial effect on the public health, resulting from the extensive draining operations that have been going on with an accelerated progress during the past few years. I would recommend that more active measures be put in operation to prevent the careless and improper disposal of carrion by hauling it out into the bush and leaving it unburied to decompose in the sun, as is far too commonly the practice. A prosecution or two would have a beneficial effect, I am convinced.

WM. MORTON, M.D..
Medical Health Officer.

WATERLOO.

SANITARY INSPECTOR'S REPORT.

I beg to submit the sanitary report for the year 1889. Also the report of the dairy men and milk venders that received license during the year. The authorities of Galt and Berlin demanded that those supplying these towns with milk should have their premises and cows inspected, and I found little or no complaint against the manner the Board had

adopted for having the work done. I found all the cows in a healthy condition, well cared for and fed almost entirely on farm produce, only in three places were brewers' grains being fed, and then only in small quantities.

From the decrease in the quantities of grains that are being fed since last year, I would judge that it is not considered a profitable feed. There was no still slop feed this year.

The premises and utensils were all clean and well kept.

The manner adopted by the Board for inspecting slaughter houses this year is a decided improvement to the previous system, there having been only one complaint made against the condition of any licensed slaughter house, and that was not well founded.

There were several complaints regarding the condition of the creeks running through Berlin and Waterloo, which were investigated and found just cause for complaint. The town of Berlin has taken the matter in hand and promised to have the nuisance abated as soon as possible.

The township has been almost clear from infectious and contagious diseases. There have only been a few cases of typhoid fever and diphtheria, which were properly looked after.

WM. COWAN,
Sanitary Inspector.

WILBERFORCE.

SECRETARY'S REPORT.

On the whole, the health of this municipality for the past twelve months may be pronounced good. In the spring a number of cases of inflammation of the lungs appeared amongst old and young, a few of the former proving fatal. About the same time measles appeared in one of the schools and spread through that section. Since then and up to this time no contagious diseases have been known here.

There have been several deaths from consumption this Fall.

GEO. STONE,
Secretary.

YORK.

MEDICAL HEALTH OFFICER'S REPORT.

In submitting my annual report upon the health of the township, I have to regret that contagious diseases have been much more prevalent this than last year. The cause for which no doubt, speaking generally, has been due to the bad water supply and carelessness which people manifest in placing their water closets proximate to the wells. In this regard I must emphasize the clause of my last report in which I pointed out the dangers of the privy pit. In several of the cases of typhoid fever which came under my notice I was able to verify the opinion of practitioners generally as to the dangers derivable from this source.

There have been six or eight cases of diphtheria during the year, the causes of which were due to local sanitation.

At this time, the township is tolerably free from contagious diseases. There is just one suggestion I would like to make to the Board this year in reference to slaughter houses.

I do not think there has been sufficient attention paid to the destruction of offal.

The number of slaughter houses is on the increase, and the difficulty of dealing with them is consequently becoming each year greater. Now there are only two satisfactory

ways of dealing with the question of the destruction of offal—cremate or bury. To use it as fodder for hogs has been tried and creates a nuisance in every instance. Used as a manure its effects are if possible worse than feeding. We are becoming quite an important township, our geographical position secures us the distinction of being the premier township of the province, let us show by our intelligence and civilization we are worthy of the distinction. We cannot convince ourselves, let alone others of this, while we allow the offensive emanations from slaughter houses to pollute the air all along our chief thoroughfares.

H. E. WEBSTER, M.D.
Medical Health Officer.

YARMOUTH.

SECRETARY'S REPORT.

On the 23rd of February, several cases of smallpox were reported in the adjoining township of Southwold, and the Board put in force the regulations necessary to prevent the introduction of the disease into the township of Yarmouth. Medical men were appointed to vaccinate at all the school houses in the township, and guards were stationed at the principal roads. Three families were quarantined until the Board had time to investigate their case, they having come past the guards from the infected district. On the 25th March the guards were taken off, the Southwold Board having full control of the disease. The cost of enforcing smallpox regulations and vaccinating was four hundred and ninety-one dollars.

Several minor complaints were investigated.

The sanitary condition of the township at present is first class.

K. W. McKAY,
Secretary.

CHAFFEY.

MEDICAL HEALTH OFFICER'S REPORT.

At the present time there is no disease of an epidemic or contagious character existing in the township, and good health prevails generally. In April last, in the centre of the township scarlet fever broke out, being imported by a returned member of a family. The cases in this family being mild no physician was called in. The disease was believed to be scarlatina, which many in this section ignorantly consider not to be true scarlet fever. No preventative measures were taken to combat the spread of the disease. A few days later the disease broke out in a malignant form in a neighboring family, with the result of four deaths, besides one member of the family blinded in one eye for life. At the request of our Board I three times visited the stricken neighborhood and took the most vigorous, and what proved to be the most successful, measures to prevent the spread of the disease, viz.: isolation, disinfection, etc. The school was closed for two weeks and the houses of seven exposed families fumigated with sulphurous and chlorine gases, a work carried out under my personal supervision. No other cases of infectious disease occurred during the year. As the railroad runs through the heart of the township with stations on its northern and southern boundaries, the possibility of the spread of contagious or infectious diseases is more to be feared than in remote townships. And here

let me remark that a large proportion of the inhabitants of Chaffey are unprotected against the ravages of smallpox. If the terms of the vaccination act (Revised Stat. Ont., 1887, Chap. 206) were carried out it would not involve an expenditure of more than twenty-five dollars, and all fears of an invasion of smallpox would be dissipated.

F. L. HOWLAND, M. D.,
Medical Health Officer.

CARTWRIGHT.

CHAIRMAN'S REPORT.

I have to state that there were twelve cases of typhoid fever reported to this Board during the year, of which two cases proved fatal.

These cases were chiefly confined to three isolated families and to the small village of Ceserea. The cases were all reported to this Board between the 9th of September and the 21st of October.

Pursuant to a resolution of the Board all the members thereof proceeded to the said village of Ceserea and made a thorough inspection thereof, and in the opinion of the Board the prevalence of the disease was owing to impure water and insufficient drainage from cellars.

The Board ordered that these causes of disease should at once be remedied, and I am happy to report that such orders were promptly complied with, and that no further cases have since been reported.

I am also pleased to report that through the viligance of the Board of Health, and the efficient services of the local practicing physicians, our municipality is generally healthy, and with the exception of the cases above noticed, free from contagious or infectious diseases.

R. P. PURST,
Chairman.

CLARENDON AND MILLER.

SECRETARY'S REPORT.

In presenting to you the annual report of the local Board of Health of the townships of Clarendon and Miller, it affords me much pleasure to be able to state that the general health of these townships for the past year has been good, with the exception of a few cases of infantile affections. There have been no other cases of a serious nature that have come to my notice. I believe the municipality to be in good sanitary condition.

E. PLAYFAIR,
Secretary.

CAISTOR.

SECRETARY'S REPORT.

I am happy to state that the health record of the township for the present year has been quite satisfactory, very little sickness of any kind having occurred during the year. No contagious diseases have visited our locality. One case of typhoid of a mild character was reported to have existed. Under the watchful eye of our sanitary inspector about every nuisance was removed, and all dead carcasses were buried.

Our medical health officer's services have not been required during the year.

H. J. SHARP,
Secretary.

CAMBRIDGE.

SECRETARY'S REPORT.

The Board held three meetings during the year. The last meeting was held towards the end of October, it being for the purpose of gathering information from the several members of the Board regarding the health and sanitary condition of the municipality.

Each of the members and the Medical Health Officer report that the general health and sanitary condition of this municipality will compare favorably with the more healthy of those throughout the Province.

I am not aware that we have had any contagious diseases except a few cases of measles and diphtheria, with one death in each instance.

O. LAFRANCE.
Secretary.

CHARLOTTENBURGH.

MEDICAL HEALTH OFFICER'S REPORT.

A regular inspection of all suspicious premises, including cheese factories and slaughter houses, has from time to time been made during the summer to secure a proper observance of the regulations regarding the proper sanitary condition of such premises; and it affords me much pleasure to say that few complaints have been made of failure in those particulars.

The general sanitary condition of the whole municipality for the year has been remarkably good. Only a few isolated cases of diphtheria and one of typhoid fever have occurred—the latter being imported.

The only epidemic prevalent, as far as I am aware, was that of mumps.

The present condition of Health in the township is exceptionally good.

ALEX. FALKNER, M.D.,
Medical Health Officer.

CALEDON.

MEDICAL HEALTH OFFICER'S REPORT.

The current year up to within the past few months has been exceptionally healthy, but about midsummer commenced a period which, for the prevalence of typhoid fever, has not been equalled for years. What would at first seem strange, is the fact that it has been quite as prevalent in the farming community as in our village, and in proportion to the population even more so. We naturally expect such cases to occur where the land is low and wet, drainage bad, ventilation defective, habitations close together, or general uncleanliness; but many cases have occurred where the land is high and dry, ventilation good, cleanliness almost perfect, and in farming communities where the dwellings are *not* close together. In the north-west corner of Caledon and the adjoining portion of Erin township there have been eighteen cases of typhoid fever within a radius of two miles, besides many other cases scattered throughout the township. Also five near Inglewood, four at Credit Forks, two near Catarac, and no doubt other cases through the township not reported by the attending physicians. In no part of the township, however, has the spread of the disease been so rapid and severe as in the north-west corner above referred to. There is not in the county a more intelligent, cleanly and respectable people; their land being high and dry, thr dwellings good and well situated, their barnyards clean and dry, and previous to this time the people themselves very healthy. Nor as far as could be ascertained was the disease imported but occurred sporadically in the first case. Disinfectants were used freely, viz.: carbolic acid, phenyle, calcium, chloride and bromo chloralum. Care was taken to disinfect and bury stools; the sick rooms well ventilated, and members of the family isolated as far as was possible. In spite of all this, however, one after another were stricken down with the disease and it went from house to house. Fortunately, however, all these cases made good recoveries although the average duration of the illness was over three weeks. The above cases occurred in my own practice with the exception of two which were attended by Dr. McKinnon, of Hillsburg, Medical Health Officer for the township of Erin, who met me to confer on the matter. We examined cellars, privies, barnyards and made strict inquiries about the wells, all of which, with one exception, had been recently cleaned. But we found nothing to account for the prevalence of the disease. We finally concluded that it was due to a large but well-wooded swamp about a mile to the south, although the swamp was then just as it had been for years, no part of it having been cleared. We attributed it to the extra drouth of the season and consequent lowness of water in the swamp. This hypothesis, however, did not long hold good for I began to notice that no cases occurred to the south and east of the swamp where, from the prevailing winds being west, the malaria of the swamp would naturally be carried. I then collected samples of drinking water from the above places and from any others where the disease was present, in all twenty-one samples. I carefully tested each sample, using the evaporation and permanganate of potash tests for original matter, and solution of nitrate of silver for chlorides. I found eleven samples positively unfit for use; five doubtful and five very good. Of the five good samples one was from Credit Forks from a spring much used by the villagers there, and two from dwellings where a single case occurred in each house. In the north-west corner, however, all samples were bad, containing large percentages of organic matter. It will be noticed that in the instances where the water was good only one case occurred in each house, while on the other hand where the water was bad one after another of the family were taken down. It was not that the disease became more contagious, but that the inmates of each house were rendered more susceptible from the use of the impure drinking water. The lesson to be taken from the above facts is that in high, dry land, after a very dry season, look to your wells, more especially if the water becomes very scanty. Have them cleaned and deepened if possible. Avoid scarcity by watering stock from other sources, and if this does not prove sufficient boil all water before using. Of the four cases occurring at Credit Forks, two were due to filth heaps collected from a large boarding house where table refuse of all kinds and excreta were thrown, causing an unbearable stench. One

was due to the immediate proximity of a privy and from sleeping in small, damp, close bedroom. I am quite satisfied that had it not been for the timely visit of our Health Inspector, many other cases of typhoid would have occurred at Credit Forks. The houses are small and each contain besides the family from five to thirty boarders, and large quantities of filth are continually accumulating. I personally notified many of the householders to have the privies cleaned and caused the removal of several hog-pens which were in a filthy condition.

The number of cases of scarlet fever have been few and of a comparative mild form, but several cases of a severe type occurred in one family in the following manner: A child was seized with scarlet fever a few miles from Alton village and I was called to see the little patient. There having been no cases in the neighborhood for over a year I began to make enquiries regarding the cause. I found that a lady from Toronto was visiting there with her child, who she said had recently been suffering with scarlatina, but that the attending physician had told her that after a month there would be no danger of carrying the disease. Now this is just where a mistake often arises, for unless proper disinfection of clothing is made, and free exposure to fresh air. the disease may be retained in the clothing for years. There is no contagion so easily conveyed, nor on the other hand so easily got rid of as scarlet fever. If the clothing be freely exposed to fresh air it will in a short time become absolutely free from contagion, while on the other hand a handkerchief or a small piece of clothing thrown carelessly into a closet, may retain the poison for years, in fact it has been known to be carried by letters or parcels. These cases referred to, however, all recovered, and by strict isolation and disinfection the disease was prevented from spreading. The number of cases of diphtheria have been less than in former years and I presume were of a very mild type, for all of my own cases recovered and I did not receive any notice from other physicians in the municipality of death from this disease.

It will be unnecessary for me to here relate the recent flood disaster at Alton village, it has been so thoroughly ventilated through the public press. I would just say, however, that it is fortunate for us that winter is approaching instead of summer, otherwise the results to the public health might be more appalling than the calamity itself. It is to be hoped that the broken dams may be repaired and filled before spring for the malaria contained in the three or four feet of mud in each pond and scattered in the neighboring swamp is sufficient to produce an epidemic of typhoid or malarial fever, diphtheria and possibly scarlet fever unless the ponds are filled and the rubbish cleared away before spring we may have to ask assistance from the Provincial Board of Health and it behoves us as a Board to be on the alert and see that every possible means is taken to prevent what ought to be a very serious matter. I have suggested to the Relief Committee at Alton that no better use could be made of the money subscribed than to remove as far as possible all rubbish and debris. I thought it would be well on the part of our Board to bring these facts before the public, through the press, that aid may be received from our County Council and from any other possible source to be expended for the aforesaid purpose. At the risk of being considered an alarmist I would say that sickness and death lie in that flooded valley and it is better that if we, as guardians of the public health, should err that the error be made on the side of safety.

JAS. ALGIE, M.D.,
Medical Health Officer.

CAYUGA, NORTH.

SECRETARY'S REPORT.

There have been a few cases of typhoid fever near Caufield during the current year, but none severe and none had a fatal result. The doctor attributed the fever to the use

of bad water. There have also been two cases of a slight nature near Kohler, supposed to have been scarlet fever. The persons attacked have all recovered. In all other respects the sanitary condition of the township during the current year has been very good. There is no illness of any importance in the township now.

JAMES MITCHELL,
Secretary.

CHAFFEY.

SECRETARY'S REPORT.

As Secretary of the Chaffey Board of Health, I have to report that on the 30th of April last I received a notice from Dr. Hart, Huntsville, stating that two children of John Tynan, Four-mile House, Chaffey, had died of malignant scarlet fever. I at once wrote out a large placard and posted it on the house the same night. Returned home and wrote to medical health officer Dr. Howland, who, on receipt of my letter, sent me word that he had telegraphed the Reeve to have a meeting of the Board next day. He himself went at once to the house of Tynan and found on enquiry that members of eight families had visited the house during the sickness. As it was near the public school and most of the families had children attending school he at once ordered the school to be closed for a few days.

At the meeting of the Board we each reported what we had done in the matter and they concurred that we had acted rightly in the affair and further instructed the medical officer to revisit the house of Tynan and take a sufficient supply of chloride of lime for all the families who had visited the place. There were four deaths from the fever in the house of Tynan in all, but I am happy to state that in consequence of the prompt and vigorous action taken in the matter it spread no further. On the 18th of May I received a report from the doctor that, having visited the neighborhood and considering the danger over, he thought I might order the school to be opened the next week, but that I had better keep the placard on Tynan's house one week more and if at the end of that time there were no new cases might remove it. I took the necessary steps in each case and we have had no further trouble in the township.

WILLIAM CLARKE,
Secretary.

COLCHESTER, NORTH.

MEDICAL HEALTH OFFICER'S REPORT

It gives me pleasure to state that no epidemic or serious disease has visited us during the past year. The health of the township has been comparatively good. In this township the farmers have as a rule built their barns too near their dwellings. As the ground is level there is no natural drainage and the soil is more apt to become saturated, giving off miasma which at a greater distance would have no effect. If farmers could be informed of the importance of this and act accordingly, it would save them a great deal of sickness in the future. Part of this township is still in forest but is being rapidly settled, therefore the inportance of this suggestion is obvious

If the Provincial Board could arrange so that medical health officers could speak in each school section on the most important subjects pertaining to that particular locality a large amount of practical information could be given which would have a good effect on the sanitary condition of the different townships.

E. PROUSE, M.D.,
Medical Health Officer.

CLARKE.

SECRETARY'L REPORT.

For some years the services of a medical health officer and sanitary inspector have not been found necessary, and none was appointed for this year.

At our first meeting the township was divided into five districts, and one allotted to each member of the Board.

The school houses and premises, slaughter-houses and cheese factory have been visited. The school houses and surroundings, while in some cases are capable of improvement, were generally found to be kept in fairly good condition.

One slaughter-house was reported as being kept in a filthy state, and on complaint being made and notice given its use was discontinued.

No fault could be found with the cheese factory, it was well kept and nothing offensive in connection with it. In one well in the neighborhood the water was found to be unfit for use; it was ordered to be cleaned out, and if the quality of the water was not improved thereby it was to be filled up. Several other wells at the foot of a hill, on the summit of which is a graveyard, have been suspected of being contaminated by the soakage from above, but as no injury to the health of those using the water is as yet apparent, and as the presence of deleterious matter in the water could only be established by an analysis by some competent person, the Board has not taken any action regarding them.

Not a case of contagious disease has been reported by any medical practitioner requiring attention by the Board; and with the exception of some cases of German measles and whooping cough, and two cases of typhoid fever, the township has been entirely free from contagious diseases. In the cases of typhoid one of the patients died and the other recovered, the physician in attendance reporting that proper precautions were taken to prevent the spread of the disease.

There seems to be an increased willingness on the part of the people to carry out any reasonable and inexpensive suggestions for the improvement of the sanitary condition of their premises, but many of them do not know what means to use, or what may be fairly required of them.

Our Board is of the opinion that much good would be done through the distribution by the assessor or in some other way, of a circular containing such practical suggestions as could be cheaply and easily carried out by themselves, in regard to the regular cleaning out of wells, cisterns, cellars and yards, the early removal of manure heaps, the cleaning out, disinfecting and deodorizing of privies, etc.; and we hope that this method may be adopted and carried out by the Board for next year.

ROBERT KNOX,
Secretary.

DOWNIE.

SECRETARY'S REPORT.

We are happy to be able to state that our municipality has been almost, if not entirely, free from epidemics or contagious diseases of any description during the present year, consequently the Local Board of Health has had nothing to attract their attention in that direction. Our Board notified the trustees of the various schools throughout the township to get the wells and water closets in connection with said schools cleaned out on or before the 15th day of July.

We are of the opinion that it is a grave mistake to have cheese factories erected on the banks of our streams and creeks, thus polluting them and thereby creating a nuisance. Last year complaints were lodged with the Board as to the contamination of the river Avon from some source, believed to arise from the sewerage of the city of Stratford being emptied into it, thereby endangering the public health and rendering it unfit to drink by cattle or other animals. Our Board notified the city council to take immediate steps to prevent said sewerage coming into the river, but they took no action. The sewerage of said city is still to a very great extent if not wholly emptied into said river, but as the water was not so low this summer as it was in the past season no complaints were entered.

P. SMITH,
Secretary.

DORCHESTER, NORTH.

SECRETARY'S REPORT.

I have much pleasure in reporting that the township is in the most favorable sanitary condition. Not one case of infectious disease has been reported by any of the physicians following their vocation in this municipality for this year. And the inhabitants are carrying out the law as far as we know to our satisfaction.

D. P. AYLSWORTH,
Secretary.

DARLINGTON.

MEDICAL HEALTH OFFICER'S REPORT.

There has not been more than the usual amount of sickness this year.

A few cases of typhoid fever this fall, all of which are recovering. Most of these cases were contracted outside of this municipality.

Some cases of scarlet fever; but no epidemic of this or any other disease, with the exception of whooping cough which made a general sweep through the northern part of the township this summer and fall.

The sanitary condition is fair, although more attention should be paid to the regular cleaning of wells and proper drainage of yards.

J. C. MITCHELL,
Medical Health Officer.

DURHAM.

MEDICAL HEALTH OFFICER'S REPORT.

It becomes my duty in compliance with the requirements of the law to submit my annual report concerning the sanitary condition of this municipality, especially the part more immediately under my jurisdiction, during the present year. In doing so it becomes my unpleasant duty to report more sickness during the autumn than usual in the south part of the township, although taking the whole year it has been but a fair average. The extreme scarcity of pure, wholesome water for drinking and other household purposes continues to be probably the most prolific cause of the sickness that has occurred.

Diphtheria was very prevalent again this year in this part of the township, it occurred in the beginning of the year, a large proportion of the cases were of a severe type, but fortunately nearly all the cases terminated favorably.

Dysentery also prevailed to a considerable extent during July, August and first half of September, affecting adults as well as children.

Typhoid fever did not prevail to any great extent during the year.

Measles and scarlatina have prevailed but slightly, if at all, during the year, at least none came under my notice and none have thus been reported to me. We have been exceptionally free from the eruptive diseases during the year.

Malarial fever has been unusually prevalent during the last few months, it was of a very severe type, showing a strong tendency to relapse, usually taking the form of pneumonia and generally affecting both lungs. In fact the majority of the cases that came under my observation seemed to be accompanied by a congested condition of the lungs from the beginning of the attack ; some cases proved fatal, but now the amount of sickness is perceptibly decreasing and I trust the epidemic will soon be at an end.

H. MINSHALL, M.D.,
Medical Health Officer.

DUMFRIES, NORTH.

MEDICAL HEALTH OFFICER'S REPORT.

It affords me great pleasure to report that the health of the township during the past year has been exceptionally good, not a single case of contagious disease having been reported during the entire year. The death-rate has been unusually low and general sickness very light.

The sanitary inspectors, according to instructions, inspected the slaughter houses, cheese factories, and the premises of those supplying milk for the towns and villages, and in every case were well pleased with the way in which these premises were kept.

At an early meeting of the Board a resolution was passed advising the council to pass a by-law authorizing the inspectors to charge a fee of one dollar for each inspection of slaughter houses as well as for each inspection of premises from which milk was supplied for sale. In this way a certain amount of the expense of inspection has been borne by those most directly benefited by the work of the Board.

I have visited only two schools during the year, Roseville and No. 25. These I found fairly satisfactory. The latter has been greatly improved by a new heating apparatus and ventilating shafts. Roseville and other schools would do well to do likewise.

At different times during the year the Board has advised the trustees of the various sections to frequently clean the schools, yards and outbuildings, and to report any unsanitary condition or nuisance to the Board at once. In this way we have endeavored to deepen the interest of trustees and ratepayers generally in their schools and in the health of their children.

The Board has been particularly pleased with the evident desire of the residents of the municipality to comply with the requirements of the law relative to the disposal of all kinds of refuse. So well has the law been observed in this respect that only one case of nuisance has been reported which was on the advice of the sanitary inspector immediately removed.

I may say in closing my report that it has been the desire of our Board to render the most efficient service at the least possible expense.

ADAM THOMSON, M.D.,
Medical Health Officer

DUNGANNON AND FARADAY.

MEDICAL HEALTH OFFICER'S REPORT.

These townships have been remarkably free from endemic and epidemic diseases the past year. Within six months I have not had a case of diphtheria and I believe typhoid fever is almost altogether unknown. The same may be said of malaria fever.

T. A. BEEMAN. M.D.,
Medical Health Officer.

DUMMER.

MEDICAL HEALTH OFFICER'S REPORT.

In laying before you my annual report for the year, I must apologize for its brief ness. The general sanitary condition of the municipality will compare favorably with the more healthy of those throughout the Province, there being, with perhaps one or two exceptions, no locality from which we might reasonably expect poisonous effluvia which might develop, or at least, so contaminate the atmosphere as to favor the spread of contagious diseases. I know of no complaints having been made, and so far as my knowledge of the residents of the municipality goes, I have reason to think they cheerfully wish to comply with the requirements of the Public Health Act.

J. A. COUCH, M.D.
Medical Health Officer.

EASTHOPE, SOUTH.

SECRETARY'S REPORT.

It affords me pleasure to be able to report that the sanitary condition of our township during the current year has been quite satisfactory. From my predecessor in office or the first eight months of this year, I learned that nothing had occurred in that time

which required any special attention of the Board of Health ; and since then, only one case came under my notice, which threatened to become a public nuisance ; but prompt and decided action of the Chairman of the Board prevented it becoming such. Dr. Whiteman, our medical health officer, reports very favorably, and the other medical men in and near this township, of whom I enquired on the subject, state that no contagious or infectious diseases of any kind had come to their notice in South Easthope.

V. STOCK,
Secretary.

EMILY.

MEDICAL HEALTH OFFICER'S REPORT.

I beg to report that the general health of your municipality during the current year has been exceptionally good. In the southern portion of the township we had one severe case of diphtheria ; but with complete isolation and efficient disinfection the disease was confined to the person first attacked, and who, I am happy to say, made a good recovery.

VINCENT C. CORNWALL, M.D.,
Medical Health Officer.

EUPHRASIA.

MEDICAL HEALTH OFFICER'S REPORT.

I am glad to be able to report the absence of any serious outbreak of epidemic diseases during the year, and that the general health of the community has been fairly good.

There has been so far as I am aware no cases of typhoid, a few cases of scarlet fever, and no cases of measles. The most dangerous and most prevalent disease in the township during the year was diphtheria.

On the 13th of February, being notified by the medical man in attendance, my partner, Dr. Ego, in my absence visited the place on the 1st concession of the township. He placarded the house and gave such instructions as were necessary for preventing its spread, and also for cleaning and thoroughly disinfecting the house and premises. In this family, I understand, there were two cases, one death occurring before my visit. Again, on the 27th day of February, being notified that in another house in the same locality it had broken out, my partner visited the house, gave instructions for the isolation of the affected parties, placarded the house and ordered the cleaning and disinfecting of the place, and so far as I am aware no other cases occurred in that locality.

On May 20th I was sent for, to attend a patient on concession 9, and found the party—a school teacher—bad with diphtheria. I immediately ordered the closing of the school and isolation of the patient, sent all the other members of the family to another unoccupied house at a distance, and enjoined quarantine until such time as it was known whether any more cases would break out amongst them. I treated the patient—a very

severe case—until better, and had the house and premises disinfected, and the well cleaned out before any more water was used out of it. In this instance, the infection was clearly drinking foul water contaminated by the drainage of the stable manure which was located within a short distance of the well, and on higher ground with the surface drainage always flowing towards the well. I analyzed the water and found it contained a large percentage of organic matter evidently from the manure heap. I ordered the school to be cleaned out, whitewashed, and disinfected before being used again, and I am pleased to say no other cases occurred there since, except one in a neighboring family that I was notified of the day of my second visit. This family I visited twice, and submitted to the same quarantine regulations as the other, and in neither case did it spread beyond the first house in which it broke out.

On August 6th, I was called to attend a family in the south-eastern part of the township, and found two members suffering from a very malignant type of diphtheria. On making further investigation I found that in the same locality there were three members of another household down with the disease. These latter were ill first, and as there was some communication between this house and the one I was called to, I believe that by this means was the disease carried to the second house. I immediately isolated the infected parties, placarded the premises and gave all the necessary instruction for the proper disinfection of the houses. In these cases I feel sure the disease originated from the members of the first family using drainage water from a low boggy swale.

I was again informed that diphtheria existed in another house in the eastern part of the township; but that they were under the care of a medical man. Therefore, I did not deem it advisable to visit the place, but I wrote him drawing attention to the clause in the Act compelling all medical men as soon as they became aware of a contagious or infectious disease in any patient under their care, to give notice of it to the medical health officer for the locality, or Board of Health.

It is to be regretted that some medical men completely ignore the provisions of the law in that respect, and pay little attention to the usual requirements for the prevention of the spread of disease. Were the necessary provisions strictly carried out, of isolation and disinfection, I am convinced we need not have more than one case when we frequently have a dozen.

I would also respectfully suggest the advisability of our Board of Health getting a large number of sheets published of instructions as a means for preventing the spread of this and other infectious and contagious diseases, so that whenever a case is discovered, the family may be given one of these sheets that it would be constantly available, giving the minutiæ of instructions which cannot be given by a medical man sufficiently often to be kept in memory by the parties requiring them, or these might be bought from the Ontario Board of Health by the 100, at a trifling expense.

In all, about 20 cases of diphtheria, a few cases of scarlet fever and measles, with some cases of whooping-cough, were the total that came under my observation in the township during the year. There was also, I am pleased to say, very few diseases of a general character, and the health of the people on the whole might be considered good.

It gives me great pleasure to add in conclusion, that in every instance when necessary, I have had the hearty co-operation and assistance of members of the Board to carry out the provisions of the law, and the necessary requirements for stamping out disease; and while it is unnecessary to make individual distinctions, I cannot but acknowledge with thankfulness the assiduity of the Reeve, Mr. Gilray, in doing everything that was possible to aid me in the discharge of those duties, not only for the eradication of disease, but also for the amelioration of suffering humanity.

T. S. SPROULE, M.D.,
Medical Health Officer.

ELMA.

MEDICAL HEALTH OFFICER'S REPORT.

The Township of Elma was visited during the month of August, with an epidemic of typho-malarial fever, and in a few instances of genuine typhoid, none of these cases, however, have proved fatal that I am aware of up to the present juncture. In a former report, I think I gave a topographical description of the township, with the prevalent diseases up to that time. Being one of the flat townships with a luxurious growth of pine, and nearly every kind of wood and having a very loamy soil, we had in former years a great deal of diphtheria and consequent loss of life among the children. This, I observed, was much worse in saw-mill villages where acres of saw-dust remained piled to a depth of several feet, retaining a continual moisture where diphtheritic fungi are invariably propagated.

During the last few years under the new drainage law, a very large area of the township has been thoroughly drained and put in a state of cultivation, and I have noticed a great diminution of diphtheria as a consequence, more especially is this the case where the saw-mills have been torn down and the mounds of saw-dust removed.

The township has several villages included in its area, all unincorporated. One of these contains about 400 inhabitants, and had two slaughter-houses in full operation until we had a few cases of typhoid (previously referred to), when I wrote to the Central Board asking for their removal. One of these has since been taken to the country, and the other which was not in close proximity to any residence and well kept allowed to remain.

In this township are nearly a dozen cheese factories; at several of these, hogs are kept during the warm summer months, and it is needless to say that they are the cause of a great nuisance wherever kept, and I have seen a few cases of typhoid on such premises, or in close proximity thereto. Such nuisances must, in my mind, have a deleterious effect on the cheese manufactured on such premises, and I think, the authorities should give the matter their serious consideration, inasmuch as cheese is an important article of food, much of which we export to other countries; this evil could be easily obviated by legislation, although it might place patrons at a little inconvenience in removing food from the premises to their homes.

In conclusion, I hope the Government in their wisdom will see fit to revise that portion of the Act allowing allowing the Town and Township Councils to appoint their own members a board of health, which, in my mind, should be composed of men thoroughly independent of the suffrages of the people. The Boards of the present day too often perform their duties in a worse than perfunctory way; and to give an example the Board of this township, of which I am medical health officer, has not met, that I know of this year, and I have no doubt the farce is carried on in other townships in a similar manner.

J. R. HAMILTON, M.D.,
Medical Health Officer.

EASTNOR.

MEDICAL HEALTH OFFICER'S REPORT.

It affords me much pleasure to report that our municipality has been entirely free from contagious or infectious diseases during the present year.

The general health of the municipality has been good. I also request the attention of our Board to the disease which has prevailed among the cattle of some sections of this municipality.

JAS. S. FREEBORN, M.D.,
Medical Health Officer.

EGREMONT.

MEDICAL HEALTH OFFICER'S REPORT.

I am pleased to be able to state that the general sanitary condition of the township is excellent. There has been but few cases of those diseases known as preventable. The only ones coming under my observation were three of typhoid fever, a few cases of simple scarlatina, with one case of diphtheria. In the typhoid cases one was imported. Every precaution was taken as to disinfection, isolation, etc., where necessary. Pertussis has been rather prevalent among the children of some neighborhoods of late, and when attending school; the parents have been advised to keep them at home until the symptoms have abated. Owing to the rolling condition of the land, with a gravelly bottom and abundance of pure spring water, malaria with its attendant evils is unknown.

A. L. BROWN, M.D.,
Medical Health Officer.

ENNISKILLEN.

MEDICAL HEALTH OFFICER'S REPORT.

No serious illness or fatal epidemics of any kind have been met with. Therefore, the duties of the medical health officer and health inspector have been light. The isolation, and the abundance of room, together with plenty of fresh air must always make the country the healthiest abode of man. At the same time ignorance of sanitary laws, and indifference to the proper construction of house drains and out-houses have been attended with much illness and loss of life. This should not be the case, and if the Board of Health of this township do nothing more than awake an interest in these matters, it will not have existed in vain.

G. D. LOUGHEED, M.D.,
Medical Health Officer.

ESQUESING.

SECRETARY'S REPORT.

The sanitary inspector reports very favorably of the sanitary condition of the several villages of the municipality, much more attention being now given by the people to the condition of their premises than formerly.

There has been only one case of contagious disease reported during the year, from which there was no spread of the contagion.

The Local Board has ordered the removal of the only slaughter house in the municipality; this was unavoidable owing to numerous complaints, the owner failing to keep it in a proper condition.

There has been, I am informed, quite a few cases of typhoid fever during the year, none of which have been reported to the Board of Health, hence no action by that body. The difficulty, as usual, being with the attending physicians, who will not report the cases of contagious diseases occurring in their practice. Some remedy must be found for this, such as the employment of medical health officers, or other means of enforcing the provisions of the Public Health Act.

J. MURRAY,
Secretary.

EDWARDSBURGH.

SECRETARY'S REPORT.

The Secretary of the Local Board of Health of the township of Edwardsburgh begs leave to report that the sanitary condition of the township has been fairly good, and is at present free from any kind of epidemic or contagious disease.

Early in May the sanitary inspector visited a number of places and caused the burial of dead carcasses and the removal of any thing that might be detrimental to the public health. On inspection he also found some of the school privies to be in a disgraceful condition. The trustees were ordered to have the premises thoroughly cleaned up, which was done forthwith.

GIDEON FAIRBAIRN,
Secretary.

ELDERSLIE.

SECRETARY'S REPORT.

The Secretary of the Board of Health of the township of Elderslie for the year 1889, reports:—That after being duly organized the members of the Board were appointed sanitary inspectors for the township.

School houses and grounds, creameries and a cheese factory were inspected, and found kept in a satisfactory condition. All dead animals were buried. The health of the residents has been such that no notice of any dangerous diseases existing has been received. No nuisances have been reported to the Board.

DR. McKECHNIE,
Secretary.

ERIN.

MEDICAL HEALTH OFFICER'S REPORT.

In compliance with the provisions of the Health Act I beg leave to present my annual report for the year ending November 15th, 1889.

The Board in this municipality has had some work in the fore part of the present year, and we trust that in the future the efforts put forth and the work accomplished may be of such value as to open the eyes of parsimonious and short-sighted economists, to the benefits to be derived from sanitary measures. Taking the year as a whole the health of this municipality has been fairly good. I regret, however, to state that, with two exceptions, not a single report came to me from any physician attending any case of contagious or infectious disease in this municipality, a state of affairs which I trust will, in the near future, be remedied.

In the month of February diphtheria made its appearance in Mimosa, a small village in the western part of this township, in the house of one Mr. John Reid. Mr. Reid states that the medical attendant carefully warned him as to the nature of the disease, and advised as to isolation of patient, disposal of infectious matter, etc., but I am sorry to state that neither Mr. Reid nor the medical attendant gave any notice whatever to any member of the Board, so far as known to me, nor to myself until the disease made such headway that two deaths had occurred, one a child of Mr. Reid's, and the other a child that lived across the street, and who, I am informed, was allowed to visit patient first afflicted during its illness; in fact the health law was so ignored by Mr. Reid, who is a magistrate, that a public funeral was allowed, and worse still the coffin opened at the grave, thereby giving every opportunity for the spread of the disease. On the 27th of said month, I was notified by one of the Board that diphtheria prevailed in said village of Mimosa. I at once visited the village and carefully examined the houses in which

said deaths had occurred and the surrounding premises, also all other houses that were considered suspicious. I found that the house of Mr. Reid (about nine days after death had occurred) was now undergoing a process of disinfection, otherwise the house and surroundings were in as good a sanitay condition as probably could be expected, taking all things into consideration. In fact in all the houses I visited I could not find very much at fault. True, at one place, I found a family living in a house separated from a stable in which were cows and horses by simply a partition or wall of house. After advising proprietor as to what he should do, he kindly acquiesed and carried out, I believe, my instructions. At this time there were two patients in the village afflicted with the disease, so I placarded all the houses in the village in which the deaths had occurred, in which any patients were afflicted, or in which any cases had been that had not been satisfactorily cleansed, or was not, at the time of my visit, being disinfected, and gave instructions as to isolation of patients then ill, and as to disposal of all infectious matter.

On the eighth of the following month I received a card from one of the persons whose house I had placarded, that there were cases of diphtheria in two other houses in the immediate vicinity of Mimosa, and that if I did not at once put a card on said houses I was to at once remove the one I placed on his. On the following day I attempted to visit these houses, but on account of the condition of the roads I could only reach one of them. I found this house in more than a usually good sanitary condition, and upon enquiry I learned that the patient here was allowed to mingle with those who had been afflicted prior to notice being given to Health Board. This house was nearly one mile from the village of Mimosa. I concluded this was a case of direct infection. I placarded the house, gave usual instructions and then wrote to the medical attendant. The next day I visited the other house and here again I found the patient had been with those previously afflicted, and that this one was also a case of direct infection by commingling with those afflicted. I placarded the house, gave the usual instructions, etc. I then was notified that two other families were afflicted. The roads were in such a condition I could not possibly get there with my conveyance, so as soon as the roads were passable I visited the other houses. These again were cases that had been exposed to direct infection by being with others previously afflicted. Placarded houses, gave instructions, etc. The people in the vicinity now became thoroughly aroused and the major portion were anxious to aid us in checking the disease which, I believe, would not have occurred had proper precautions been taken or notice been given to the Health Board or myself at the inception of the disease in Mimosa. If such notice as is imperative by the Health Act were given, at least one life might have been saved and a great amount of suffering and anxiety avoided.

After a careful enquiry as to the cause of the outbreak of diphtheria in Mimosa, I report that, in my opinion, the disease was not caused by the unsanitary condition of the village, but was conveyed here by parties who were exposed to the infection in other places, or in other words the disease was imported. I also report that, in my opinion, the disease spreading as it did was due to the negligence and guilt of those whose duty it was to notify the Health Board.

On April 15, I was notified of a case of scarlet fever in the village of Orton. This small village being partly in two municipalities, and a case of scarlet fever across the street in East Garafraxa, said case having passed through some stages of the disease prior to a physician being called. I believe infection direct was the cause in the second case. I placarded the premises, gave instructions, and no further trouble occurred.

In the month of October some five or six complaints were made to me regarding children attending school from houses in which there were case or cases of typhoid fever. I interviewed the teacher of said school and she at once said that she would attend to the matter and in the future not tolerate any attendance of such children from houses where any infectious or contagious disease existed.

A. H. MACKINNON, M.D.
Medical Health Officer.

ELMA.

SECRETARY'S REPORT.

The general health of the township is and has been very good, very few cases of contagious diseases have been reported to members of the Board, or have been in the township.

The Board has, during the year, caused two slaughter houses to be removed from near any travelled road into the bush.

As in former years the owner or occupants of all cheese factories and slaughter houses were notified in the spring that the factories and houses and surroundings must be all kept as clean and as orderly as the law in that behalf directs.

The increased drainage throughout the township each year is also lessening the cause of disease.

T. FULLARTON,
Secretary.

ERNESTOWN.

CHAIRMAN'S REPORT.

This township is in a healthy state; there has been only a few cases of contagious diseases during the year, and such precaution was taken by the medical men in attendance as to prevent any deaths or the spreading of the disease beyond the parties afflicted. At the present time the municipality is entirely free from any contagious diseases.

BOWEN E. AYLSWORTH,
Chairman.

FLAMBORO', WEST.

CHAIRMAN'S REPORT.

At our first meeting the sanitary inspector was instructed to inspect all houses in villages, hotels, factories, school houses and premises, cider mills and apple drying establishments, slaughter houses and dairies. At our second meeting the report of the sanitary inspector was adopted, which report states that the places mentioned above were inspected and with a very few exceptions were found in a good sanitary condition. In the case of the exceptions the parties were ordered to clean up their premises, which order was promptly complied with. Permits were granted to nine persons owning slaughter houses, their premises having been found clean and well kept. The dairies and premises of milkmen in the township have been carefully inspected by the inspector, and the premises found in a clean and satisfactory condition, and the cows, aggregating two hundred and eighty-four, to be well kept, in good condition, and very healthy. There has been comparatively few cases of infectious or contagious diseases during the year. In the spring there were several cases of German measles, none of which ended fatally. The causes of three fatal cases of scarlet fever was attributed to contagion carried from other districts, and not from any unsanitary condition. During the latter part of the summer several cases of typhoid and malarial fever occurred, owing to drying up mill dams, none of which cases, however, were fatal.

THOMAS MORDEN,
Chairman.

FLAMBORO', EAST.

MEDICAL HEALTH OFFICER'S REPORT.

This year as in the past we have every reason to feel thankful that we have not been visited with any widespread cause of mortality, or sickness in this municipality. We have had very few complaints of nuisances, and where there were any the cause was looked into and speedily remedied. As there were only two that came under my notice I might mention them. That of the slaughter house on the road allowance between the municipalities of Waterdown and East Flamboro', which the joint councils had closed up, and the water supply at school section No. 1 on the Plains road. I examined this water, and after doing so had the trustees close up the well for the remainder of the season and get their supply of water from another source.

It is a matter of congratulation to know that although we have had the various zymotic diseases in our midst during the past year, we have yet to learn of there being any deaths from such.

There has been quite an epidemic of pertussis along the 1st concession during this fall, but as yet without any fatal results.

Some four or five cases of measles came under my notice during the year, all being of a mild form.

There have been some few mild cases during the year of diphtheria.

Scarlet fever existed in two families, and these are the only cases that I have been called to during the year of this disease.

I have been called to twelve cases of typhoid fever during the year, two of which I had removed to Hamilton hospital on account of not being able to get anyone to take care of them. All did well. Four of these cases contracted the disease elsewhere and came into the township with it. I attribute the cause in these cases to the filthy condition of privy vaults, and in some cases to the low condition of the wells during the latter part of the summer and early fall.

J. A. McGREGOR, M.D.
Medical Health Officer.

FINCH.

CHAIRMAN'S REPORT.

There were no cases of any dangerous contagious diseases this year in the municipality.

The Board caused the slaughter houses in the village of Berwick to be removed.

There was no medical health officer appointed as the Board was of the opinion that under the circumstances it was not necessary, and that a medical health officer could be appointed when it appeared necessary.

The general sanitary condition of the township is very good.

JOHN M. CAMPBELL,
Chairman.

GLOUCESTER.

SECRETARY'S REPORT.

The local Board of Health for the township of Gloucester, county of Carleton, was duly organized at the beginning of this year, but have not found it necessary to have more than four meetings, as the state of health of the inhabitants generally in the township during the year has been good. No infectious or contagious diseases in the form of an epidemic, with the exception of isolated cases of diphtheria, have been known to exist.

Our medical health officer has been called upon but in three cases.

Our sanitary inspector has during the year spent nineteen days in looking after nuisances of different kinds, and it seems to this Board that the law is wrong with regard to the payment of the sanitary inspector, inasmuch as it provides that his fees for inspecting premises and giving notice that a nuisance exists and calling again to see that it has been abated, should be paid out of the township funds. This Board fails to see why such charges should not be taken out of the pockets of the wrong-doers.

C. BILLINGS.
Secretary.

GOSFIELD, SOUTH.

MEDICAL HEALTH OFFICER'S REPORT.

The present year having been singular in point of immunity from the prevalence of diseases of a nature calling for the interference of our Board or its officers, my report is necessarily brief.

The only matter demanding attention has been the invasion of the neighboring municipality of Pelee island by smallpox. In consequence of this I have, in accordance with our Board's instructions, either in person or by proxy, attended at each school house in the township and vaccinated all those who presented themselves, except those who had been recently successfully vaccinated.

No other matter having called for my attention during the year, I have nothing further to report.

S. A. KING, M.D.,
Medical Health Officer.

GEORGINA.

SECRETARY'S REPORT.

The Board met and organized in the month of February. Various complaints having been made concerning a party living near Udora, in south-east part of the township, that was in the habit, year after year, of loosing old horses and carelessly letting their carcasses lay about in the neighborhood, causing pollution of the atmosphere when warm weather set in, to the great annoyance of the inhabitants of that locality, the secretary was requested to communicate with the party and order him to bury any such animals immediately, and discontinue the practice for the future.

On March 14th the Board met, having received notice from Dr. Noble that several members of the Miers family, in the village of Sutton, were ill from typhoid fever. The medical health officer, with a committee of the Board, were appointed to take immediate steps for their relief. Said committee reported the cleaning of yard, closing up of well found situated in a position that rendered it quite unfit for domestic purposes, disinfectants were freely applied, nurse provided along with other necessaries. All of the family, five in number, finally recovered.

The sanitary inspector was ordered to examine all cellars, wells, back yards, etc., within the village of Sutton about the 20th April and see that the Public Health Act was fully complied with. The secretary was requested to notify the butchers that no slaughtering of animals nor rendering of tallow, etc., would be permitted within said village after the 1st of April.

On April 27th a notice was received from Drs. McDermott and Fierheller, of Sunderland, stating that two cases of scarlet fever were in the family of John Wilson. The premises were immediately placarded and other arrangements made for their relief. One case proved fatal, however. I am happy to say that all of the other members recovered.

In the beginning of the month of October a circular letter was received from Drs. McDermott and Fierheller, stating that typhoid fever prevailed at Udora, in a house occupied by a family named Hambly, lately from Leaskdale, in the township of Scott. The chairman and secretary visited said family and found them very ill and in destitute circumstances. Provision was at once made for their maintenance, and an effort made to obtain a nurse ; in this, however, we failed. According to information obtained in the neighborhood these parties were originally from the township of Scott, and the husband still employed there when fit to work. Besides, as we are told, the disease was contracted at Leaskdale, and a sister-in-law, who we found in attendance still weak from the effects of same complaint, who was the mother of a young child. The Board agreed to pay for the keep of this child so long as the mother was engaged in nursing the Hambly family. The Board provided for their maintenance, with the exception of about four days, until they were reported convalescent.

Notice was received on the 17th inst. from Dr. Noble, stating that typhoid fever prevailed at Mrs. Doidge's, 5th concession, township of Georgina. Necessary precautions will at once be taken.

With the exception of the foregoing the township of Georgina has been free from any epidemic or contagious diseases. Our medical health officer has upon all occasions been very attentive, and the members of the Board generally, particularly our chairman, who, as usual, has been most energetic in the performance of any duty devolving on him.

ANGUS EGO,
Secretary.

GWILLIMBURY, EAST.

SECRETARY'S REPORT.

A sub-committee of the Board was appointed to keep an oversight of the slaughter houses in the township, being vested with authority to take such action as they might deem necessary for the protection of the public health.

Quite a number of cases of public nuisances occurred during the year, which were promptly and efficiently dealt with by individual members of the Board.

In accord with our usual practice the secretary sent out circulars to the various physicians practicing in the municipality, asking for a detailed report of the infectious diseases treated by them during the year, from which they compile the following statement, viz. :

	No. of Cases.	Recovery.	Deaths.
Scarlatina	5	5	..
Scarlet fever	3	3	..
Diphtheria	12	11	1

The Board have much pleasure in reporting the general health of the community at present as most satisfactory.

A. J. HUGHES,
Secretary.

GRIMSBY, SOUTH.

MEDICAL HEALTH OFFICER'S REPORT.

There have been five cases of scarlatina in the municipality during the year. Source of infection unknown. Probably some clothing long laid away. One of these cases was puerperal, and as is usual proved fatal. The disease did not extend to anyone outside the family.

We would recommend as we did last year, and as is probably we may do next year, that it is the duty of the attending physician in rural districts to placard houses where there are infectious diseases, and that he be supplied with placards, as he is now with blanks for reporting contagious diseases.

D. McMURCHIE, M.D.
Medical Health Officer.

GREY,

SECRETARY'S REPORT.

In submitting to you my annual report for this township, it affords me great pleasure to be able to state that we have again been blessed with another healthy year. With the exception of a few cases of dysentery and measles, we have been free from cantagious or infectious diseases, and I believe the township at the present time to be in an excellent sanitary condition.

WILLIAM SPENCE,
Secretary.

GLENELG.

SECRETARY'S REPORT.

I have the honor to report that this municipality is perfectly free from any infectious or contagious diseases, no cases of such having come to the knowledge of the Board with the exception of one case of diphtheria in the early part of the year, which was isolated under the directions of the attending physician, and was confined to one member of the family, and was not very serious.

J. S. BLACK,
Secretary.

GARAFRAXA, WEST.

MEDICAL HEALTH OFFICER'S REPORT.

Typhoid fever and malarial fever pretty prevalent. There have been no other cases of contagious or infectious diseases during my term of office. The public health with this exception is good on the whole. I would suggest that the attention of the inhabitants be called particularly to the necessity of having their wells thoroughly cleaned and disinfected at least twice a year, and would also have their attention called to matter of

systematic and thorough drainage from cellars, cesspools and water closets. It should be made compulsory for the latter to be thoroughly cleaned at least four times during the summer and twice during the winter, besides a jar of chloride of lime or some other disinfectant should be kept constantly on hand, and stools sprinkled with the disinfectant frequently.

In every case of typhoid under our care every means has been employed during illness and after recovery to isolate and disinfect patient and all clothing, furniture, etc., exposed to the contagion.

A. H. HOLLIDAY, M.D.,
Medical Health Officer.

GAINSBORO.

SECRETARY'S REPORT.

I beg leave to report that the general health of the township of Gainsboro, has been exceptionally good during the current year. There has been no serious epidemic of any contagious disease; only a few cases of scarlatina in Wellandport, which was prevented from spreading by the medical health officer taking prompt action to isolate cases. The Board has had a few cases of nuisances to deal with, which have been properly attended to. At the present time there is no contagious diseases, or any other serious cases of sickness in the township.

S. KENNEDY,
Secretary.

GODERICH.

CHAIRMAN'S REPORT.

In submitting my annual report I am happy to state that the duties of the Board were not very arduous during the past year.

The school houses, ten in number, are comfortable, kept clean, well ventilated, and a full supply of good drinking water in or convenient to the premises of each. Also necessary out-houses to each. No report of skin disease, smallpox, diphtheria, or any other contagious disease has been made to the Board for the past year. In short the medical practitioner to the Board has not been called to visit any of the schools during the past year, which speaks well for the sanitary condition of the school houses and the health of the children in attendance.

In my previous reports I have stated how that the geographical position of the township, with its lake and river surroundings, and its numerous springs of pure cool water are conducive to the health of its inhabitants. It is one of the most healthy localities in the province, and generally speaking the farm houses and their surroundings are well kept, even the careless and indifferent are being shamed into imitating their careful and progressive neighbors. Not a single complaint has come before the Board this year of ill kept, or filthy premises. No deaths have occurred, nor do any diseases exist except those arising from natural and uncontrollable causes.

JOHN COX,
Chairman.

GLAMORGAN.

SECRETARY'S REPORT.

The township has in the past year been free from disease, and up to date no deaths have been reported. The Board has no medical health officer or sanitary inspector. Each member of the Board having a set district to overlook, and this year the services of none of the members of the Board have called in, except in the case of two aged persons who had temporarily to be provided with necessaries.

STEPHEN KETTLE,
Secretary.

GOSFIELD, NORTH.

SECRETARY'S REPORT.

I have much pleasure in reporting that the health of the people in this township has been during the past year exceptionally good. Malarial and typhoid fever have been almost entirely absent, only four cases having come under the notice of the Board; one fatal, a child of very poor constitution. The people generally have exercised more precaution in keeping their places clean.

By order of the council vaccination has been made general as far as possible. In 1885 nearly eleven hundred were vaccinated, up to the present time nearly three hundred have been, and I fully expect it will nearly reach four hundred. Diphtheria and other contagious diseases have been entirely absent from the township, no case having come to the knowledge of the Board.

ISAAC JACKSON,
Secretary.

GUELPH.

SANITARY INSPECTOR'S REPORT.

During the past year no epidemic has visited the township, and from what I can learn the health of the people has been very good. I have had very few complaints made to me during the past year, but those that have been made were duly investigated by me. On the 29th of December last, complaints were made to me about Mrs. Pinder's cows having some disease of a dangerous nature, and that the milk from those animals was being sold to the people. I at once went and investigated into the matter, and found such was not the case, although Mrs. Pinder had cows which were suffering from some contagious disease, but still she was not selling the milk, and in order to satisfy the people I requested Dr. Grenside to go to Mrs. Pinder's place and make an examination of the condition of the cattle. He reported there was no cause for alarm, as the animals as soon as they were affected by the disease went dry and gave no milk. In order to satisfy her customers Mrs. Pinder purchased milk from other vendors, and having notified the people through the public press of what I had done I think they were well satisfied and have heard no more complaints. On the 3rd of April, I received a letter complaining of a fat rendering establishment on the York road. I went and examined it, but I did not consider that there was anything sufficient to warrant me in ordering Mr. Stull to discontinue his work of rendering. On the 9th of April, I was notified that a dead horse was lying on the property of Mr. F. J. Chadwick, I sent and

had it removed to the city nuisance ground. On the 29th of May, a complaint was made by Mr. Dawson, of a nuisance which existed in the shape of two dead horses, I had them buried and threw two bushels of lime on them. On the 30th of May, I was instructed by Mr. Thos. McCrae, chairman, to pay a visit to Mr. Andrew McConnell, as it had been reported to him that a dead cow was lying on his premises. I visited the place but found that although there had been a dead cow there some time before still it had been disposed of. On making a closer examination of the place I found the house inside and outside was in a filthy condition and was in my opinion injurious to the health of himself and family and I instructed McConnell to have the place put in a proper sanitary condition. As he was working at the Ontario Agricultural College and earning good wages I reported the matter to Professor Mills, and he told him that unless he kept his place in a proper condition he would be discharged. During the past year a number of dead animals having been picked up and buried from different parts of the township. The amount expended by me in visiting places where complaints were made during the past year have been $9.50. Burying dead animals $4.00. In conclusion I am happy to say that my work as sanitary inspector for Guelph township has been of a very agreeable nature during the past year.

W. CLARKE,
Sanitary Inspector.

GARDEN ISLAND.

CHAIRMAN'S REPORT.

The Local Board of Health for the village of Garden Island beg leave to report that an outbreak of diphtheria took place amongst the children here in September. There were twenty-seven cases reported, six of which proved fatal. We caused examinations to be made on two occasions by two physicians from the city of Kingston, to endeavor if possible to locate the cause of the outbreak. They were not quite decided on this point but recommended the closing of the public schools, isolation as far as practicable of the sick ones, flushing of certain drains, and the fumigation of certain premises, all of which we saw was done. As there have been no new cases developed for over a month we hope the disease has now been stamped out. The public schools were reopened on Monday, 18th.

Apart from this outbreak of diphtheria the general health of the inhabitants has been first class.

A. CALVIN,
Chairman.

HINCHINBROOKE.

SECRETARY'S REPORT.

I have to state that the Board has had no occasion to meet this year. There has been no sickness of a contageous kind, nor in fact of any kind to speak of, only three or four deaths in all in the township, and none of them were from contageous diseases. We had no need for a medical health officer. The sanitary condition of the township seems to be all that could be desired. The people all take an interest in keeping their places in a good state of cleanliness.

JOHN HAMILTON,
Secretary.

HULLETT.

MEDICAL HEALTH OFFICER'S REPORT.

It is again my pleasant duty to report regarding the sanitary condition of our township for the past year. We have had during that time a few cases of typhoid fever and one death; but in no case was it traceable from one house to another. We have had three cases of diphtheria and one death; this disease was contracted by the family while visiting in another township. Hygienic and disinfectant measures were promptly attended to, and the spread of the disease prevented. At present the township is tolerably free from all infectious diseases and nuisances of any kind.

O. YOUNG, M.B.,
Medical Health Officer.

HUMBERSTONE.

MEDICAL HEALTH OFFICER'S REPORT.

I have this year as formerly given my best attention to the sanitary condition of the municipality. I may say that through the exertions of the inspector, coupled with those of my own, health conditions about the village have been fairly maintained, and nuisances of one kind and another that were developing, abated. A stolid indifference by some of the village inhabitants, in properly locating and disinfecting water-closets, I have, unfortunately, found to exist; together with erecting pig-styes near roads and dwellings. In some instances no sanitary status could be effected without threats of invoking the corrective force of the health laws. Zymotic diseases during the year have prevailed to some extent. Whooping-cough has been quite prevalent, but there have been no fatal results from it, or its sequences, so far as I know. Parents allowed it for the most part to run its course without scientific treatment. A few simple cases of measles have occurred, ending favorably. My attention has been called to only two cases of scarlet fever, one was treated by myself; the infection was imported from Buffalo. The other was treated by Dr. Neff, he could not trace the source of the infection—both patients recovered. The usual isolation and disinfection were adopted, and no one suffered from the infection. There have been a few cases of typhoid fever: one proved fatal, being an old person partially paralytic, who caught the disease in Buffalo. The other cases were supposed to have been caused by typhoid germs, or microbes from either wells getting lower than usual, or through the effects of drought, or from the atmosphere which seemed to be poisoned during the hot weather with a sort of germ dust. These cases received the best isolation and disinfection possible. Since my last report I successfully vaccinated seventy-nine persons, mostly children by direction of the reeve, and at the expense of the municipality. Those who were vaccinated before my last report, and who had paid for the same were reimbursed by me as directed by this officer, when the council decided to pay all the changes for vaccination. Other diseases than zymotic have prevailed during the year, but to a small extent. The butcher shops have been kept in a good sanitary condition, and their meat has been of a good wholesome quality. No public dairy business has been conducted in the municipality this year, but considerable milk has been purchased by some of our citizens from Mr. Geo. Hiltz, who keeps a dairy at Port Colborne, the milk has been of good quality.

M. F. HANEY, M.D.,
Medical Health Officer.

HALDIMAND.

MEDICAL HEALTH OFFICER'S REPORT.

I beg to state that it is a matter for congratulation that we have been so mercifully spared from visitations of serious and fatal epidemics.

The cases of contagious and infectious disease which have been brought to the attention of your medical health officer have been in every case sporadic ones, that is, in no way connected with an epidemic.

In the month of November, 1888, diphtheria broke out in the dwelling of Mr. C. Lane, but was confined to one patient. An investigation of the cause of the disease was made and ascertained, and I believe as far as possible removed.

In December, of same year, a case of diphtheria occurred at the residence of Mr. Robt. Rodgers (Front Road). It was thought at one time that it arose from the individual being in close proximity to a young women dead from the same disease. On investigation such was found not to be the case, but the residence and environments of the patient were in an unsanitary condition and likely to cause the disease.

In this case as in the former one recovery ensued.

On May 24th, 1889, a case of typhoid fever occurred at the residence of Mrs. Larmer, Grafton. The locality was inspected by your sanitary inspector and myself, the cause ascertained and orders given for its removal.

The above includes all the contagious diseases of this township for the past year, that have been brought under the cognizance of your medical health officer.

I beg to embody in this report a short reference to the annual meeting of the Provincial Board of Health, at Brockville, in the latter part of August. This meeting was a most enthusiastic and interesting one, and profitable to the furtherance of a still better condition of sanitation throughout this Province.

The papers read and discussed on the subject of drainage and sewage brought out the views of the most competent authorities of this country. The question of the preservation of the physical health of the young, particularly in its bearing on the special senses, such as sight and hearing and the early causes which destroy or prevent their function brought out some of the fallacies existing in our public school system.

A resumé of the debate by Dr. Higgins, state medical health officer for the State of Missouri, and his remarks on the causes of disease and how to prevent it closed a most interesting meeting, and it is safe to assert that at no very distant time the duty of the physician will be much more important in preventing disease than in curing it.

W. W. BOYCE, M.D.,
Medical Health Officer.

HAWKESBURY, WEST.

MEDICAL HEALTH OFFICER'S REPORT.

In submitting my report for the current year, I am sorry that I cannot give you a full and accurate account of all the cases that should be reported to me by the attending physicians.

During the early months of the year there were a great many cases of pneumonia and bronchitis of a severe type, a few having ended fatally. During the summer months there was not the usual amount of diarrhœa, and the cases not severe.

Measles and whooping-cough are just now making their appearance in the municipality, and I am afraid unless some action is taken to prevent the spread of these diseases, there will be a different report to make next year, already there is one death from measles and two from whooping-cough.

I have to report a few mild cases of diphtheria during the year, none having proved fatal.

G. J. McINTOSH, M.D.,
Medical Health Officer

HAWKESBURY, EAST

CHAIRMAN'S REPORT.

The Local Board of Health, of the township of East Hawkesbury, have no difficulty in carrying out the health law, as the inhabitants now understand the necessity of strict regulations in regard to the prevention of contagious diseases.

We had only a few cases of diphtheria and scarlet fever during the year.

The physicians practising in the township are doing their duties as to notifying the Health Officers of any contagious diseases.

A. ROUTHIER,
Chairman.

HARVEY.

SECRETARY'S REPORT.

There has been one case of diphtheria, Dr. McCamus immediately notified me of it. House placarded and isolated. The Local Board ordered certain grocers to supply all their wants. The case was that of a married wamen—she recovered. We had the house thoroughly cleaned, papered and disinfected with carb. acid, merc. chloride and sulphur, and so stamped it out.

The village (Bobcaygeon) Board of Health kept a close watch on the family and the connections in village.

The afflicted one lived close to the boundary of Harvey and the village, so the authorities were very strict in keeping away all outsiders.

I am very very glad to be able to report that our township is free from all infectious and contagious diseases, the above reported case of diphtheria is the only one we have had this year.

JAMES S. CAIRNDUFF,
Secretary.

HAGARTY.

SECRETARY'S REPORT.

With the exception of measles, which prevailed for a long time in part of one settlement in the early part of last spring, the municipality has been entirely free from all contagious deceases.

The high attitude, rolling ground, rapidly running streams and the large tracts of ever green forests, all combined, seem to render this an exceptionally healthy part of the country. The Local Board of Health has to be always on the alert, owing to our being in direct communication with many cities.

THOMAS ROCHE,
Secretary.

HIBBERT.

MEDICAL HEALTH OFFICER'S REPORT.

I am happy to state that at the present time the municipality appears to be free from contagious diseases, and since my last report, so far as I can learn, there have been no deaths from such in the township.

We have had only one severe case of typhoid fever, which was imported from Niagara. Necessary precautions were taken to prevent the spread of the trouble which happily succeeded.

There was an epidemic of scarlatina during the early part of the summer. It spread over a considerable portion of the township and visited a number of families, without, however, any very serious results.

Later on, whooping-cough visited us and is still with us. The little patients are being isolated as well as possible under the circumstances.

One or two complaints reached the members of the Board regarding nuisances, but on being notified the parties creating them had them removed. The school premises were visited and found in a reasonably satisfactory condition from a sanitary point of view.

It would add to the completeness and interest of our Annual Report if physicians and others would faithfully report to the Board all cases of a contagious nature that come to their notice.

A. D. NASMITH, M.D.,
Medical Health Officer.

HOUGHTON.

CHAIRMAN'S REPORT.

This municipality during the past year has been remarkably free from contagious diseases, and the general sanitary state of the township as well has been good. In the south-east part of the township there have been a few cases of malarial fever, but no deaths occurring therefrom. During the early part of the season a slight alarm was raised in the south part of the township in consequence of the disinterment of a body, after having been buried some years, small-pox having been the cause of death. The necessary precautions were taken and no bad results followed.

CHAS. DICKINSON,
Chairman.

INNISFIL.

SECRETARY'S REPORT.

In presenting to you the Annual Report of the Local Board of Health of the township of Innisfil, I have much pleasure in saying that the general health of the township for the past year has been good, and that the township is in an excellent sanitary condition.

CHARLES PALLING,
Secretary.

KING.

SECRETARY'S REPORT.

I have to report that during the past year the township of King has been tolerably free from contagious diseases. The only case requiring the serious attention of our health inspector was that of one family in the village of Lloydtown. Owing solely to the filthy condition of the prenises in which they lived diphtheria broke out in the family and out of seven cases three proved fatal. Prompt measures were at once taken to prevent the spread of the disease; the premises were thoroughly cleansed and disinfected and now all danger of infection is past.

The general health of the township is at present good, with the exception that "la grippe" has given quite a number a friendly call.

L. E. HAMBLY,
Secretary.

KEPPEL.

SECRETARY'S REPORT.

I am pleased to say that the health of this municipality has been exceptionally good during the past year—the death-rate being much below the average. The only disease which has taken an epidemic form during the past year being a light form of German measles, very few families in this municipality escaping infection; no deaths resulting from this cause. Also an outbreak of diphtheria, which, by prompt action, was very soon stamped out. There has been but one case of death reported to me from infectious or contagious diseases during the year— a child of six years dying of diphtheria. The sanitary condition of the municipality is very much improved, caused by better drainage from dwellings and the water supply. The work of the sanitary inspector has been light during the year, very few complaints of nuisances having been made.

GEORGE ATKEY,
Secretary.

KINLOSS.

SECRETARY'S REPORT.

I am happy to be able to report the township of Kinloss in a good sanitary condition. The health of the inhabitants has been very good during the year. A few cases of diphtheria occurred, principally in one family. The attention of the Board was called to it by our very efficient medical health officer; the house was placarded and the school closed for a short time, which arrested the spread of the disease.

PETER REID,
Secretary.

KINGSTON.

MEDICAL HEALTH OFFICER'S REPORT.

I beg leave to report that the sanitary condition of the township has been very good during the past year. That we have not been visited with any serious epidemic beyond a few cases of malarial fever which were not confined to any particular locality.

M. J. BROWN, M.D.,
Medical Health Officer.

KINLOSS.

MEDICAL HEALTH OFFICER'S REPORT.

The year 1889 was ushered in by a very general epidemic, of a mild form, of measles throughout our township, which gradually died away in the month of March. I visited one or two of the schools at that time, but did not consider it necessary to take any steps in the matter.

In the month of June Dr. D. A. MacCrimmon reported a case or two of diphtheria in the family of Mr. Rennie, teacher in S. S. No. 7. I at once visited the place, ordered the school to be closed, placarded Mr. Rennie's house, and took such steps as effectually stamped it out. In the present month, November, another outbreak of diphtheria of a more serious character occurred around Kinlough and west of Holyrood. On receiving notice of the outbreak I immediately placarded the houses in which there were cases and gave the people such instruction in regard to sanitation as I hope will prevent it spreading. I must say that I find the people alive to the importance of the efforts of the Board to suppress infectious and contagious diseases and readily lend a hand to aid them in their laudable efforts.

There is only one slaughter house known to me in the township and I am pleased to be able to give a very favorable report of it. I visited it several times during the past summer and always found it neat and clean. The cheese factories also have been much improved and no complaints have been heard during the past season. I regret to have again to draw your attention to the very unsatisfactory sanitary state of our schools and school grounds. The ventilation of the school room has received little if any attention, the only supply of air being from the door or peradventure a broken window. No attempt has been made to drain the grounds and nature has been left to adorn them. It is to be hoped that during the next season some efforts will be made to remedy these evils.

JOHN S. TENNANT, M.D.,
Medical Health Officer.

KINCARDINE.

MEDICAL HEALTH OFFICER'S REPORT.

No infectious or contagious disease came under my notice during the year and therefore I can report very favourably as to the general good health of the people.

There was a case or two of diphtheria of a very mild type which was thoroughly isolated and prevented from assuming serious proportions. No nuisance existed in the municipality. Good health prevails among the people, which is a proof of the good sanitary condition of the surroundings.

THOS. BRADLEY, M.D.,
Medical Health Officer.

LOUTH.

SECRETARY'S REPORT.

In reporting the sanitary condition of this township, I would say that typhoid fever is now prevalent and in some cases of a virulent type. Two cases have been fatal, four have recovered, and three cases still linger. The death-rate for the first six months was eleven and for the last three months fourteen—the largest death-rate known in this township for so short a time. The sanitary condition of the township at present is generally considered good. The physicians attending typhoid patients report the cause of the disease attributable to impure water.

CLARKE SNURE,
Secretary.

LONDON.

SECRETARY'S REPORT.

The slaughter houses and cheese factories in the township were inspected during the season by either the medical health officer or sanitary inspector and found to be in a fairly satisfactory condition. Some complaints were made by ratepayers about slaughter houses after the first inspection, which were subsequently attended to by the inspector and the causes for such complaints remedied as far as possible. There was only one case of sickness, diphtheria, reported. The house was placarded by the inspector.

JAMES GRANT,
Secretary.

LOBO.

SECRETARY'S REPORT.

The Board called the attention of the council to the advisability of having the children of the township vaccinated. The council did not deem it expedient to take any action in the matter at present.

The Board attended to all matters that have come under their notice. The work of the Board this year has been very light owing to the general sanitary condition of the township being good.

E. R. BARCLAY,
Secretary.

MACAULAY.

MEDICAL HEALTH OFFICER'S REPORT.

I have much pleasure to report that the public health of the township of Macaulay up to the first of November has been very good.

There have been three cases of typhoid fever, but in each case the disease did not extend to more than one member of the family, and none of them proved fatal.

Early in November two families living on the west side of the river were attacked with diphtheria and a death occurred in each family. Unfortunately and contrary to my instructions a Mrs. Rykeman, who went to help nurse her brother's children, returned home, and within a week after her return three of her children were attacked with the disease, and two of the number succumbed to its dread influence. This case ought to be a lesson to the community at large, and clearly establishes the fact that diphtheria can be carried in the clothing from one place to another.

At the present time another family also on the west side of the river have the disease, and I am informed that one member of the family has died.

In conclusion I must thank our Board of Health for the prompt and efficient means taken by them to carry out my instructions and those laid down by the Provincial Board of Health, and thus prevent the spread of this class of diseases. I would suggest that the Board appoint an inspector whose duty should be to carefully examine and report, where necessary, upon the sanitary condition of the inhabitants of the township. It too often happens that when diphtheria does break out the surroundings are just such as to engender and foster the disease.

S. BRIDGLAND, M.D.,
Medical Health Officer.

McNAB.

SECRETARY'S REPORT.

As there was no epidemic or case of contagious disease reported to the Local Board of Health nor any nuisance complained of in the past year, the Board thought it unnecessary to call a meeting. I am pleased to be able to report that the sanitary condition of the township at the present time is excellent.

J. D. McNAB,
Secretary.

MARYBOROUGH.

MEDICAL HEALTH OFFICER'S REPORT.

I am pleased to state that the sanitary condition of this township during the past year has been very favorable. The only complaint of a nuisance existing was made a few days ago by a farmer on the sixth line. The complaint was that a water-closet was placed over a closed drain which emptied into an open ditch, and the water in this flowed close by a spring, which is claimed was used for household purposes. I made an examination of the place and found it as stated. I ordered its removal, which was done. Also, I condemned the use of the water in said spring, as it is unprotected. A large section of land being drained into this ditch, which at high water flows over the spring, carrying the excreta of animals pasturing on the land thus drained, as well as decayed animal and vegetable matter, which being deposited in and around the spring renders its use dangerous.

If there has been any othes nuisance existing the people themselves are to blame in not reporting to the Board, as any matter of that nature would be promptly attended to.

We have had comparatively few cases of infectious or contagious diseases this year. No cases of scarlet fever occurred to my knowledge. Several mild cases of measles and whooping cough came under my own notice, but were confined to the families in which the disease started. Five cases of diphtheria occurred, and two deaths, without any fnrther spread of the disease.

There were fifteen cases of typhoid fever during the hot summer months, but of these only four assumed a severe form; all however made a good recovery. The cause in several of these cases could be traced to the use of impure water; in the others no cause could be found, as the sanitary condition of the surroundings was good.

In conclusion I may say that a full and correct report of the number of infectious or contagious disease cannot be given unless medical men practising in other parts of the township will report cases which they may be called on to treat.

J. J. CASSIDY, M.D.,
Medical Health Officer.

MACHAR.

SECRETARY'S REPORT.

I beg to report as follows:—That in the month of September of this year a number of cases of typhoid fever occurred in the village of South River in this township, which were attended by Dr. Toole, of Sundridge, Dr. Howland, of Huntsville, and Dr. Caughill, of Burk's Falls. On the 29th September two deaths were reported, and considerable excitement prevailed in the village. At the suggestion of Dr. Howland the secretary of this Board wrote reporting the matter to the secretary of the Provincial Board of Health asking for information and assistance, to which letter no reply was received.

This Board met on the 14th of October, but in the absence of information or instructions from the Provincial Board could do nothing.

The secretary subsequently wrote to the Honorable the Minister of Agriculture, also to the local member, again asking for advice and assistance, but the only answer received was a letter from the Honorable Minister of Agriculture, who acknowledged the receipt of the letter and promised to consult Dr. Bryce, the secretary of the Provincial Board, on his return from New York.

The Local Board having no funds available to employ a qualified person to ascertain if any local cause existed that could be remedied, are powerless to prevent the recurrence of a similar outbreak at any future time.

Popular opinion is divided as to whether it is caused by the flooding of the lands in consequence of a dam erected by lumbermen to raise the water in the river to float their lumber, or from the water in the wells being contaminated from soakage through the porous soil on which the village is built.

R. COLE,
Secretary.

MACHAR.

MEDICAL HEALTH OFFICER'S REPORT.

I have had eight cases of typhoid fever under medical treatment, six of which recovered and two died. All of these cases were in the South River and immediate vicinity.

Personally I cannot assign any reason for the recent epidemic in South River, although I have heard from others that it was no doubt due to stagnant water in some pond near by. The fall of the year is the time when we expect such fevers to prevail, and many times we cannot trace it to any local cause.

At the present time the township of Machar is free from typhoid fever or any other contagious disease as far as I know.

C. CAUGHILL, M.D.,
Medical Health Officer.

MARYSBURGH, NORTH.

SECRETARY'S REPORT.

At the first session of this Board we appointed two sanitary inspectors, whose duty required them to visit all creameries, cheese factories, slaughter-houses, etc., in their jurisdiction, and enforce whatever sanitary measures deemed by them expedient. The result has been that the municipality is at present free from all contagious diseases excepting mumps, due principally to the efficient manner in which the Board and its officers performed their respective duties.

We desire to express our appreciation of the manner in which the Provincial Board of Health have enforced the provisions of the Public Health Act, and the means taken by them for the prevention and spread of disease in the province.

W. HARRISON,
Secretary.

MAIDSTONE.

CHAIRMAN'S REPORT.

I am happy to be able to report that there have been but few cases of contagious diseases during the present year in our municipality, the cause of which is owing to the prompt measures taken by the Board of Health to stamp out any of them when they make their first appearance.

GEO. A. WINTEMUTE,
Chairman.

MINTO.

MEDICAL HEALTH OFFICER'S REPORT.

The township in the year now closing has been remarkably free from any form of contagious disease. The slaughter-houses and cheese factories have been kept in good condition, and no complaints respecting them have been made.

In some school sections I think the trustees have been careless in not having the wells on the school property properly cleaned out. Their neglect to do so has in some cases caused sickness, and if not attended to in future may give rise to an outbreak of some epidemic such as diphtheria or typhoid.

W. A. HARVEY, M.D.,
Medical Health Officer.

METCALFE.

CHAIRMAN'S REPORT.

I beg leave to submit my yearly report, and in the first place would say that the labors of the Board for the year just drawing to a close have been much the same as in previous years. The cheese factories and public schools have had the attention of our Board, and also of our very efficient inspector. And I believe where improvements have been ordered by our inspector for guarding the public health they have been willingly made. Our Board during the past year has not had any complaints to settle, consequently I have come to the conclusion that the sanitary condition of our township is good. We have had no contagious diseases or epidemics of any kind, hence the mortality or death-rate has been very low. There have been isolated cases of malaria, but none proving fatal that I am aware of.

J. TRUMAN,
Chairman.

MATCHEDASH.

SECRETARY'S REPORT.

I have much pleasure in reporting the very healthy condition of this municipality for the last twelve months. No cases of an infectious or contagious character have been reported. The sanitary condition of the township is fairly good. Our schools have been open the full term, and no reports have reached this Board as to their sanitary condition other than good.

E. W. KITCHEN,
Secretary.

MORRISON.

SECRETARY'S REPORT.

I beg to report that the sanitary condition of the municipality for the current year has been uniformly satisfactory. No epidemics or contagious diseases have been known to have existed. One doubtful case of typhoid fever did occur. Precautions were taken to isolate the patient as far as possible, visitors being excluded. All evacuations were immediately carried to a waste place, emptied into a hole dug for their reception and covered up. The patient recovered and is now in her usual state of health, and no fresh cases occurred, though there have been fatal cases in the neighboring township.

THOS. WHYTE,
Secretary.

McLEAN AND RIDOUT.

SECRETARY'S REPORT.

I have much pleasure in announcing that the sanitary condition of this municipality has been unprecedently excellent.

Allow me to present you with a clean bill of health. It may not be amiss for us to announce to the public the salubrity of the country surrounding the beautiful Lake of Bays.

ANDREW SLEMMONT,
Secretary.

MALAHIDE.

MEDICAL HEALTH OFFICER'S REPORT.

In presenting my report for the year I beg leave to state that the sanitary condition has been good, and we have had no epidemic of any contagious disease during the year. During the hot, dry summer we had the usual amount of diarrhœa and dysentery, followed in the early autumn by several cases of a mild typhoid, none of which were fatal.

We have had drains and cesspools cleaned, and things generally placed in a proper sanitary condition.

Vaccination was very generally attended to during the month of March as a precaution against an outbreak of smallpox, then prevalent in the neighboring township of Southwold.

JOHN J. KINGSTON, M.D.,
Medical Health Officer.

MAIDSTONE.

MEDICAL HEALTH OFFICER'S REPORT.

In compliance with the statute I have prepared the following report: The general health of this municipality during the year has been very favourable, much above the average.

The diseases of which the Board takes special cognizance, and over which it has most control, are those classed as zymotic.

Of the above class is diphtheria, which seems to have a tendency to linger in portions of the township, as shown by several cases during the year. There was one adult, Martin Graham, whose death is much to be regretted, because preventible; for had he not returned home while the contagion was in the house he would not have taken the disease. At the present time I am not aware of any cases in the municipality. Of the same class is whooping-cough which is now quite prevalent in the south-east quarter of the township. Of the same class is also typhoid fever which has been below the average this year in prevalence.

Smallpox, measles and scarlet fever which belong to contagious diseases, I think have been unknown during the year.

R. RICHARDSON, M.D.,
Medical Health Officer.

MURRAY.

MEDICAL HEALTH OFFICER'S REPORT.

In presenting this report I am happy to state that the township has been free from contagious diseases during the past year, and that the general health of the people has been good. Our sanitary inspector has inspected several nuisances complained of during the year, and had them removed, with the exception of one which is an old cellar not in use, and contains a good deal of stagnant water which has a putid odor. I trust that the matter will be speedily settled and the cellar filled up, for it will be a cause of disease as long as it exists in its present condition. In conclusion I congratulate our Board upon the present condition of the municipality, and sincerely trust that the same vigilance, which has characterized our Board in the past, and exerted such a beneficial influence upon the health of the people, may be exercised to a still greater degree, so that our annual reports may show the people that good may be accomplished in this way.

W. H. McKAGUE, M.D.,
Medical Health Officer.

McKILLOP.

MEDICAL HEALTH OFFICER'S REPORT.

I have again the honor of submitting the yearly health report of the municipality. We have reasons for congratulation in the fact that the general health of the township was exceptionally good during the year.

We have had no epidemics this year. In a remote part of the township diphtheria broke out in one family, two children were attacked, one died shortly after the physician's first visit, the other recovered.

This family shortly after the recovery of the child visited friends in Seaforth, the result being that the child in the house visited contracted the disease.

The family were sent back to their home in the township and the necessary precautions taken to prevent the spread of the disease.

I mention this case to impress upon your minds the necessity of complete quarantine for this disease for at least fourteen days.

W. HANOVER, M.D.,
Medical Health Officer.

MIDDLETON.

MEDICAL HEALTH OFFICER'S REPORT.

In my last report I mentioned the frequent outbreaks in diphtheria in the township. I am pleased to state that during the past year a marked improvement has taken place in this particular.

About a half-dozen cases have occurred, confined to two or three families, with no doctor. Every possible means to prevent contagion and the spread of the disease were taken by your health officer and board of health with the above result.

During the months of September, October and November a considerable number of cases of malarial fever occurred, these were of a typho-malarial type and a few deaths resulted from this cause. In the western portion of the township I attribute the disease to the presence of a large body of stagnant water in the vicinity of the town of Tilsonburg, and in the western portion no other cause can be found in the pollution of streams by throwing the sawdust of mills into them, which during the dry season becomes exceedingly offensive.

After a thorough inspection of the slaughter houses in the uillage of Delhi, I called a meeting of the Board of Health through its chairman and action was taken by means of which these were removed to a greater distance from the village and placed under a regular system of inspection.

Members of the Board were also appointed to make regular visits to the various cheese factories in the municipality, and also to the premises occupied by the Delhi Fruit and Vegetable Canning Company.

These visits have had a very beneficial effect on the sanitary condition of these places Certain drains were also caused to be constructed in the village of Delhi, in order to remove all possibility of stagnant water accumulating in low places.

On the whole I believe the public health of the township to be in a better condition than at the time of last report.

J. F. HONSBERGER, M.D..
Medical Health Officer.

MARKHAM.

MEDICAL HEALTH OFFICER'S REPORT.

I beg to report that the general health of this municipality has been very good during the past year, six cases of diphtheria were reported, three of which proved fatal; also two mild cases of measles, and one of typhoid fever, the latter being an importation from the United States.

G. M. FARWELL, M.D.,
Medical Health Officer.

MARIPOSA.

SECRETARY'S REPORT.

During the year the medical practitioners in this townships have reported four cases of typhoid fever, one of which proved fatal. Six cases of diphtheria all of which recovered. A few cases of measles and mumps, but none fatal.

We consider the work done by our sanitary inspector was good and efficient. In his efforts to carry out the requirements of the "Public Health Act" he was firm and prompt, and our ratepayers being willing to carry out his suggestions, resulted in checking the spread of the few cases of contagious diseases which have occurred.

During the year the inspector has made 135 domicilliary visits, and paid special attention to the sanitary condition of our public school houses and their surroundings. Also special attention was given to the water supply at the school grounds, which was considered satisfactory except in three cases, on the recommendation of the inspector the wells were cleaned out.

The inspector ordered the cleaning up of a number of yards, and the removal of manure heaps, also several privies were ordered to be cleaned out, and hog-pens removed.

The slaughter houses and cheese factories have also received a share of his attention.

All complaints relating to the existence of any nuisance have been promptly attended to.

As a whole the present sanitary condition of the township is most satisfactory, and we consider the establishing of the Local Board of Health has had a very beneficial result.

JOHN F. CUNNINGS,
Secretary.

MALAHIDE.

SECRETARY'S REPORT.

Upon the breaking out of an epidemic of smallpox in the municipality of Southwold, in this county, in February last, precautionary measures were taken by having any parties who had been exposed quarantined, and by issuing a proclamation calling upon all persons to avail themselves of vaccination. The Board was ably assisted in this work by the several medical men of the Town of Aylmer. No case of the disease occurred in this township.

The general health of the municipality has been good during the past season. Several cases of malaria and typhoid fever have occurred, but they have been of a mild type, and few, if any, deaths have resulted therefrom.

A few cases of nuisances were reported to the Board, but these were promptly abated upon notice being given the parties causing them, by the Board.

R. L. McCALLY,
Secretary.

NIPISSING.

SECRETARY'S REPORT.

I am glad to report that the township of Nipissing is in a good sanitary condition at this date. I am sorry to report one case of diphtheria in September, which proved fatal. The Local Board of Health of this township took every means at hand to prevent the spread of the disease by quarantining the house, disposing of the corpse, seeing to the cleaning up of the premises, and fumigating with sulphur and disinfecting with chloride of lime and carbolic acid. We experience a good deal of trouble by the people not reporting cases of the disease, they have a tendency to hide instead of reporting them. Our sanitary officer reports that he has inspected the houses throughout the township and finds that his instructions have been carried out, excepting one or two cases, as regards cleaning up of yards, closets, etc.

WILLIAM MALTBY,
Secretary.

NOTTAWASAGA.

SECRETARY'S REPORT.

In the month of April diphtheria broke out in one family, and before the case was reported to the writer five members of the family had died; the full particulars of which were reported to you in my letter of the 18th of May, rendering a recapitulation of them here unnecessary.

Under the directions of the attending physician the house and contents were thoroughly disinfected with the result that though there were five deaths in that family the disease was confined to the one house, and I am happy to say that there has been no return of the disease, and it is to be hoped that we have returned to our usual healthy condition.

With this exception the health of the township during the past year has been fair, the other deaths that have taken place having been from causes not considered contagious.

In conclusion I regret to have to say that some of the physicians practicing in our municipality often neglect their duty, by failing to report the cause of death of their patients to the township register.

ANGUS BELL,
Secretary.

NISSOURI EAST.

SECRETARY'S REPORT.

The Local Board of Health of the township of East Nissouri, in submitting their report for the year 1889, to the Provincial Board of Health, take much pleasure in stating that their duties for the year have been quite nominal. The sanitary condition of the township appears to have been good. Three cases of typhoid fever which did not prove fatal were reported.

JOHN GRANT,
Secretary.

NORMANBY.

SECRETARY'S REPORT.

The sanitary condition of the township of Normanby is good. No nuisances have been reported. Contagious diseases do not exist, only two cases of typhoid fever of a mild form were reported, both patients recovered. Our sanitary inspector made his usual careful inspections of slaughter-houses, cheese-factories, creameries and school premises, and reports, that all are kept in a clean and proper state. Out of the 16 schools in the township, two are reported as having bad drinking water, the attention of the respective trustees was called to the matter.

The Board is doing its best to enforce the Public Health Act.

GEO. HOPF,
Secretary.

NISSOURI WEST.

SECRETARY'S REPORT.

The work of the Board has been light. Our inspector has enforced the provisions of the Act where necessary. He has caused a number of dead animals to be buired, and and compelled several parties to clean up places containing stagnant water, etc, which certain individuals complained of. And also enforced sanitary improvements in connection with several cheese-factories and slaughter-houses in this municipality. Our township has not suffered from any contagious or malarial diseases during the past year, but on the contrary has been and is at present enjoying exemption from such visitations.

J. P. LEE,
Secretary.

NORWICH NORTH.

MEDICAL HEALTH OFFICER'S REPORT.

It affords me much pleasure to report that the health of our village population and that of the surrounding country for the past year has been fairly good. The number of infectious diseases has been very limited. In all seven cases of diphtheria have been reported in the township. There have been two cases of scarlet fever of a very virulent type in our village, with one death; but by placarding the place and by a thorough disinfection of the house and clothing, the Board of Health were glad to see that it was kept froms preading any further. On March 22nd, there was considerable excitement in this locality by a report that there was a case of smallpox about eight miles distant, supposed to have been imported from Fingal. The chairman of the Board immediately instructed me to repair to the place to investigate. I did so with, I must say some reluctance, and you can imagine the happy state of mind I experienced when I found it was a false alarm. A lady from Fingal was visiting there, and while stopping at her father's, her little son had a papilla form eruption develop, without any febrile disturbance, which soon passsd away and the child had so rapidly recovered that his mother had just taken her departure with him when I arrived. However, the Board thought it wise that I should vaccinate the children and adults not recently vaccinated in the neighborhood, and I did quite a

number of them. There has been only one case of typhoid fever, viz., in the Heyland family, which I attributed to drinking water from a running stream by the roadside. The case was a bad one with many complications, and the young lady after lingering ten weeks succumbed to it. There is quite an epidemic of whooping cough, but all the cases so far as I know are doing well. I consider that the immunity from epidemics in this section is largely due to the viligance of the Board of Health and the abundance of pure drinking water.

W. R. WATSON,
Medical Health Officer.

NICHOL.

SECRETARY'S REPORT.

The secretary begs to report that so far as he knows or can ascertain, the sanitary condition of said township during the present year has been, and is very good, no epidemic of any kind having to any extent been prevalent. Also, that the several members of the Board of Health have been careful to ascertain whether any nuisance endangering the public health existed in their respective localities, and had caused the immediate removal of any such nuisance. A report has also been received by him from Dr. Paget, who was in January last, appointed Medical Health Officer of the municipality, in which he stated "that as well as he could ascertain, the health of the township of Nichol during the present year had been good, with the exception of a few cases of typhoid fever."

JAMES McQUEEN,
Secretary.

ORILLIA.

SECRETARY'S REPORT.

I am pleased to state that I have received no report of any case of infectious or contagious disease since my last report, I have only heard of one case in which it was necessary for any of our sanitary inspectors to act and the nuisance then complained of was, I understand, at once abated.

The medical health officer has made no report to me and I do not think his services were required during the past season.

The light duties we have been called on to attend to during our present term of office must, I am sure, be a matter of congratulation to all.

ALBERT FOWLIE,
Secretary

OPS.

MEDICAL HEALTH OFFICER'S REPORT.

During the past year a few deaths occurred from scarlet fever in the eastern portion of the township, chiefly during the spring months. As these cases were very imperfectly reported and in most instances not reported at all, I am unable to furnish any figures as to the extent or fatality of the disease, which, however, appears not to have been of any great extent or severity. Whooping cough has also afflicted the children in several neighborhoods and still prevail in some parts of the township, but so far as I know has caused no deaths.

With these exceptions the public health in the township has been free from any epidemic or contagious disease and has been as good as in former years.

As in this community, as well as in extensive areas of country both in Europe and America, by far the greater number of deaths, amounting to about one in seven, is due to pulmonary consumption, I think the fact now fairly established, that this terrible disease is contagious, ought to be more widely known, and greater precautions taken both in public and private to protect the healthy from a source of danger to which they are often unwittingly exposed.

The danger is contained in the spectum or expectorated matter known as tubercle bacille, which are found in large numbers in the spectum and multiply with surprising rapidity, the drying of this spectum on cloths or floors sets the germs free to invade the lungs and perhaps to bring about the disease in persons, who, from constitutional or hereditary causes, are less able than others to resist a morbid influence of this kind As the vitality of these germs is not easily destroyed the spectum in all such cases should be burned or promptly subjected to the influence of powerful disinfectants or germicides.

The newness of these facts accounts for the little attention paid to this subject, but the time has come when the danger referred to should be made generally known with a view to the prevention, so far as possible, of a disease so widespread and so fatal, and which every year claims so many victims.

I am of opinion that more attention ought to be paid to the condition of wells and drinking water, and that good would result from a proper examination of the well water in use at our public schools.

THOMAS W. POOLE, M.D.,
Medical Health Officer.

ORFORD.

SECRETARY'S REPORT.

The Board was called together in March, 1889, to take precautionary steps to prevent the spread of smallpox from our neighboring municipalities.

Public notices were posted in all the public places and thoroughfares of the township, notices were given and by the action of the Board all magistrates, constables, school trustees, were appointed health officers. Doctors Davey and McPhail were authorized to vaccinate all the children and adults that would be, and this work was paid for out of the general funds of the municipality. All citizens were requested in said notices, to aid the Board to prevent the disease from spreading into our municipality. By the precautionary measures and kind providence we had no cases of the disease. No other diseases of a serious nature have been reported.

HENRY WATSON,
Secretary.

ONEIDA.

CHAIRMAN'S REPORT.

I have pleasure in submitting my annual report of the Local Board of Health of this township, and have only to say that the course adopted by the Board for 1888, has been continued during the year now closing, which has been to allow each member to deal with cases requiring the attention of the Board. All such cases have been promptly dealt with and at a less cost to the township than if regular meetings were held.

No epidemic or disease requiring to be dealt with has come under our observations or has been reported to us by our medical health officer, so that we can say the sanitary condition of the township is good.

MATTHEW SPRATT,
Chairman.

OXFORD, NORTH.

MEDICAL HEALTH OFFICER'S REPORT.

For the year 1889 I beg to report as follows: First, I have to congratulate our Board on the fact that our municipality has suffered very little from epidemics of any kind during the past year. The only outbreak that occurred during the year was one of chickenpox, which is now in progress. There have been a few sporadic cases of diphtheria and scarlet fever, but all of a mild character and all resulting in recovery. There has also been a number of cases of typhoid or so-called malarial fever, some fifteen or sixteen cases coming under my observation. A number of these have been very severe, though all resulted in recovery. In this connection I would respectively draw the attention of our Board to the danger arising from allowing the discharges of typhoid or malarial fever patients, to be emptied on the surface of the ground or into privy pits, as in those circumstances it will act as a fresh source of poison, and be almost sure to produce the disease at a future time. Such passages should often be disinfected, be buried in the ground in as dry a soil as possible, and at such a depth as will insure their not being readily exposed by plowing or other excavation of the soil, and all closets which may have become the receptacle of such typhoid fever discharges before the nature of the trouble has been recognized, should be thoroughly disinfected, and the contents buried to the depth of at least eighteen inches with dry earth.

J. McWILLIAM, M.D.,
Medical Health Officer.

ORO.

MEDICAL HEALTH OFFICER'S REPORT.

In returning my report of the sanitary condition of the township, I have much pleasure in stating that very few cases of infectious diseases have come under my notice where the causes could be attributed to anything like a filthy condition of the surrouudings.

Concerning the outbreak of scarlet fever in Edgar and vicinity, I must report that no specific cause or possibility of contagion could be found, though a few isolated cases occurred later, yet its limitation should be gratifying. Of twelve cases one was fatal. One other fatal case at the same place and time could not with certainty be attributed to the same cause. Of diphtheria only three or four cases appeared and the cause could not be ascertained.

In regard to typhoid fever I am glad to report that most of the township has been very free from it. Of seven cases treated two have come from outside, and in others no positive cause for the disease could be found. The results of these were all favourable. Concerning the Rugley cases where I was asked to inspect the premises, I must report that considerable improvement might be made, a complete removal of all offensive matters, including the pigs, should be insisted on. In both families I think an earnest endeavor is being made to keep the water closets in a healthy condition. A means of draining away the filth should be afforded to keep it from the school well, which I have been informed is not in a good sanitary state.

In connection with the above I would suggest that all physicians attending cases of infectious diseases and typhoid fever in Oro, should be requested to report the same at once to your Board or health officer, in order that a full and correct account might be submitted.

There is one other point to which I would like to draw your attention. In the township burying grounds are scattered broadcast, and some of these are in most unsuitable places and afford most ready means to spread contagion. To remedy this the municipal council should provide a common burying ground in a suitable locality where every chance of spreading disease would be avoided.

W. H. CLUTTON, M.D.
Medical Health Officer.

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ERRATUM.—Owing to an oversight, the townships in a few instances do not follow in alphabetical order.

RETURN.

To an Order of the Legislative Assembly passed on the 12th day of March, 1890, for a Return of a Copy of the Judgment pronounced by the Honourable Mr. Justice Robertson, in an action in the High Court of Justice, wherein John J. Gosnell is plaintiff and Isaac Swarthout and others are defendants, and copies of all Correspondence between the License Commissioners for the East Riding of the county of Kent, and the Provincial Secretary or any other member or officer of the Government on the subject of the granting of the licenses which were in question in the said action. Also, copies of all minutes of the Commissioners, with regard to the granting of said licenses, and all reports relating thereto.

By Command,

J. M. GIBSON,
Provincial Secretary.

Provincial Secretary's Office,
Toronto, 27th March, 1890.

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COPY OF JUDGMENT.

Gosnell vs. Swarthout et al.

The evidence discloses almost reckless irregularity in the manner of granting licenses by these commissioners, and particularly as regards the manner in which the inspector kept the public papers and documents connected with his office.

The R.S.O. of 1887, Chap. 194, The Liquor Licence Act, Sec. 11, s.s. 1, declares, "That no tavern or shop license shall be granted except upon petition, nor until the inspector has reported in writing to the License Commissioners that the applicant is a fit and proper person to have a license. And (in the case of a tavern license) has all the accommodation required by law, and that the applicant is known to the inspector to be of good character and repute; and every such report shall be duly filed by the License Commissioners and shall remain open to the inspection of any ratepayer of the municipality or any provincial officer. By sub-section 2 the petition for a tavern license, which is to take effect on the 1st day of May in any year, shall be filed with the inspector on or before the 1st day of April next preceding.

The inspector received the application for a license from the defendant Patterson in this case on the 12th of April, and from the defendant Leitch on the 16th of April, the Board of License Commissioners having met for the first time on the latter day.

By sub-sec. 4 where the applicant for a license resides in a remote part, etc., or where for any other reason the license commissioners see fit, they may dispense with the report of the inspector and act upon such information as may satisfy them in the premises. In this case there was no report whatever made by the inspector as required under s-s. 1, nor was there any evidence adduced before me of the commissioners having dispensed with his report.

I also find that the commissioners did not as required by s-s. 5 on or before the 1st of April, fix a day for considering applications for licenses, nor did the inspector publish in any newspaper published in the district, there being a newspaper published in the said district, the date and place of any such meeting, nor did the inspector cause a notice containing similar information to be affixed to or near the outer door of the building in which his office is situate.

I also find that the inspector did not as he was required to do by s-s. 6, at least fourteen days before the first meeting of the board, to consider applications caused to be published in at least two, or in fact any issues of some newspapers published in the district, although there was at the time a newspaper so published, the name of each applicant for a license who was not at the time of his application a licensee under the Act, or who applies for the licensing of premises not then under license, the description of license, etc., and also the number of applications for licenses for the ensuing year. And I find that there were no licenses granted for the then current license year, the second part of the Canada Temperance Act having been in force from and since the 23rd day of March, 1885.

I also find that a majority of the persons duly qualified to vote as electors in polling division No. 5 of the Township of Oxford, County of Kent, being the sub-division in which the defendants Paterson and Leitch were applicants, each for a tavern license for premises in the said sub-division, petitioned against such licenses being granted, as they had a right to do, under s.s. 14 of sec. 11, on the grounds set forth in their said petition as set out in the pleadings.

And I further find that on the receipt of the said petition by the said commissioners they referred the same under the said 14th s.s. to the clerk of the Township of Oxford who certified to the said board of commissioners that a majority of such electors had signed such petition after having struck off three names who were not qualified as voters to sign the same.

And I further find that such petition against the granting of such licenses was lodged with the inspector at least four days before the first meeting of the board to consider the application for the said several licenses.

And I further find that at a meeting of the commissioners held on the 17th of June, 1889, after the certificate aforesaid had been received by the commissioners from the said clerk of the Township of Oxford, seven at least of the persons who had signed such petition against said licenses being granted appeared by their agent before the Board of Commissioners, and represented to the said board that their respective names had been obtained to the said petition by misrepresentation, and they and each of them desired to withdraw their several names from the said petition, and I find the withdrawal of their names left the petitioners against the application in the majority.

I further find that at the meeting of the said Board of Commissioners so held on the 22nd day of July, several of the said petitioners against the granting of the said licenses, who had not withdrawn their names from said petition, appeared before the said commissioners by their agent and in their presence requested to be heard in support of their said petition, as provided by s.s. 17 of the said sec. 11 : that the said petitioners were not then heard, the board having adjourned without hearing the parties or intimating to them where they would be heard ; that the board again met on the same day pursuant to the adjournment, but without notice to the petitioners and without hearing the petitioners or any one on their behalf ; passed a resolution granting to the said defendants Paterson and Leitch the tavern licenses applied for by them.

I further find that no licenses had been granted for at least three years previous to the granting of the said several licenses to persons occupying or keeping the respective premises occupied by the defendants Paterson and Leitch.

And I also find that in regard to these kept by defendant Leitch, the statements made in the petition of the ratepayers, that they are in close proximity to a public school, and in regard to both premises, that the quiet of the neighborhood in which they are situate would be disturbed as a consequence of permitting intoxicating liquors to be there sold are true in substance and fact.

The finding of these several facts shew that the defendants, the commissioners, acted in direct violation of nearly every s.s. of sec. 11 of the Liquor License Act, and s.s. 21 of that Act declares, the foregoing sub-sections of this section to be obligatory on the board and the inspector. But it goes on to enact that non-compliance therewith shall not invalidate the action of the board or inspector. And further, nothing in these sub-sections contained shall authorize the granting of a license contrary to the provisions of ss. 14. This s.s. 14 declares, that no license shall be granted to any applicant for premises not then under license of a majority of the persons duly qualified to vote as electors in the sub-division at an election for a member of the Legislative Assembly, petition against it on the grounds set forth in sub-sec. 8 of sec. 11, on any of such grounds. And among the grounds set forth which the 7th and 8th s.s. make legal objections which may be taken to the granting of a license, are those set forth in the petition filed by the plaintiff against these applications. So that it is only in the case of a majority of the persons duly qualified to vote as electors, etc., petitioning against which, that absolutely prohibits the commissioners from granting licenses. As already found by me, although a majority did at first so petition, yet before the petition was finally acted upon, more than a sufficient number of the petitioners withdrew from the said petition, and on the authority of Misner *v.* Wainfleet, 46 U.C. Q.B., these persons had the right to so withdraw their names, and that left the petitioners in the minority. The consequence is, that the whole question was then left to the discretion of the commissioners which however they should have exercised in a fair, judicial and impartial manner, and in compliance with all the requirements of the s.s. sec. 11, applicable to the matter before them. In this respect I think the commissioners utterly failed in the discharge of their duty.

Now in all the particulars referred to by me, there was a complete failure to comply with the Act, but notwithstanding, the provisions of the 21st ss. declares that "the non-compliance therewith, shall not invalidate the action of the board," etc. The result is, the plaintiff is left without remedy. He may point out all these provisions which the law declares it shall be the duty of the commissioners to see enforced or complied with,

he may be prepared to shew that the applicant is not a fit and proper person to have a license; that he has not the accommodation required by law; that he has been convicted of selling liquor without a license; that there is in the immediate vicinity a public school, or that the quiet of the place in which the premises proposed to be licensed are situate, will be disturbed if a license is granted; yet the commissioners, although if they properly discharge their duty to the public, should and are bound to hear and determine these questions, their failing to do so does not (under the 21st s.s.) invalidate the action of the board or inspector. So that as the law now stands all the provisions which were thought necessary by the legislature to ensure the granting of licenses to respectable and worthy persons, or the withdrawing of licenses in a district where it is not desirable for any of the statutory reasons that a license should be granted, may by force of the statute, be utterly ignored, as I find they have been in this case, unless the case is brought within s.s. 14 of sec. 11 which prohibits, in case of a majority petitioning.

For these reasons I cannot declare as claimed for by the plaintiff, and I must therefore dismiss the action, but for the reasons given I feel it incumbent upon me to do so without costs, and I am impelled to this course for the reason that I am of opinion that the plaintiff has acted *bona fide* throughout. On the other hand I am not satisfied that the defendants, the commissioners, have faithfully discharged their duty as public servants, and as to the other defendants, I think a case was made out which shews that had the commissioners acted in terms of the statute, which gave their jurisdiction, no license would have been granted to them.

Toronto, 13th January, 1890.

CORRESPONDENCE.

(*Copy of Notice.*)

Ridgetown, June 29, 1889.

I hereby demand of you a certificate stating that I am entitled to a tavern license for that certain tavern known as the Victoria House, in the village of Highgate, polling sub-division number five, in the Township of Orford, in the County of Kent, in accordance with the statute made and provided.

Yours truly,

(Signed) JAMES H. LEITCH

To the Inspectors and Board of License Commissioners for Kent.

P. S.—I have been instructed by the above named applicant in view of the decision of the High Court of Justice in the case of Pizer *v.* Fraser to take this matter into Court unless he be granted license at once. In the above case the commissioners were held to have no reasons sufficient to warrant a refusal of license as the petition against granting the same did not come within the statute and in this case there are no reasons given, and the commissioners have not taken evidence as to any valid reason for not granting license I have advised that the applicant must have license as provided by statute.

Yours truly,

(Signed) N. MILLS.

(*Copy.*)

BOTHWELL, ONT., 6th July, 1889.

HON. A. M. GIBSON,
Provincial Secretary, Toronto.

SIR,—Enclosed I send you one of three notices which have been served upon me; two are from the township of Oxford and one from the township of Harwich. The Board would like some instructions on the subject. Please return notice enclosed.

I have the honor to remain,

THOS. BOON,
Inspector E. Kent.

(*Copy.*)

PROVINCIAL SECRETARY'S OFFICE, LICENSE BRANCH.

TORONTO, 8th July 1889.

SIR,—I am directed by the Hon., the Provincial Secretary to acknowledge receipt of your favor of the 6th inst., enclosing copy of a notice served upon you, demanding that a license be granted to James H. Leitch for the Victoria House in the village of Highgate, and asking for instructions.

Without knowing anything about the circumstances, and in the absence of all explanations this Department is not in a position to offer any opinion or instructions.

It might have occurred to you when forwarding the notice that some explanations were necessary if you expected an intelligent reply.

I have the honor to be, Sir,

Your obedient servant,

(Sgd.) HENRY TOTTEN.

THOS. BOON, ESQ., Inspector, Bothwell.

(*Copy.*)

INSPECTOR'S OFFICE, EAST KENT LICENSE DISTRICT.

BOTHWELL, ONT., 10th July 1889.

HON. A. M. GIBSON,
Provincial Secretary, Toronto.

SIR,—Yours of the 8th received. The particulars regarding Highgate in the township of Orford are as follows: A petition was presented to the Board of Commissioners praying that no license be granted in polling sub-division No. 5, on the grounds that the sale of liquors are opposed to the best interests of the village and the advancement of right and good morals in our community, and that one of the places asking for license was adjoining the Public School. These are the main grounds against a license. The petition was sent to the township clerk, Mr. Watson, who found after striking some names out, that it left a majority of one and a half in favor of petition. The only hotel in the polling sub-division which had for the last 7 or 8 years had a license was the one near the school house. The case in Township of Harwich was somewhat similar and the petition was sent to the township clerk, and he has as yet taken no action. In writing to you on the 6th, I thought you would give me the reason why the courts upset the commissioners' decision as I understood it was to be made a test case.

I have the honor to remain

(Sgd.) THOS. BOON.

(*Copy.*)

PROVINCIAL SECRETARY'S OFFICE, LICENSE BRANCH.

TORONTO, July 11th, 1889.

SIR,—I am directed by the Hon., the Provincial Secretary to acknowledge receipt of your favor of the 10th inst., having reference to the notice served upon you by parties claiming licenses.

A very great deal depends upon the wording of the petitions served upon the Board requesting that no licenses be issued in certain polling sub-divisions. You have not thought it necessary to favor this department with a copy, hence this opinion will be of little value.

In the Essex Centre case, Pizer *v.* Fraser, the petition was general and had reference to no individual or premises in particular, and they objected to licenses being issued in the polling sub-division on the grounds set out in sub-section 8 of section 11 of the License Act.

The Court held that the petitions should be specific and mention the person or premises against whom or which the petitioners have objections.

In asking for assistance or advice from this Department you would save much time and correspondence if you would understand at the outset that full information must be communicated before advice can be given or opinions formed. You seem to assume that this Department has full information although you have never sent it forward. You had better send a copy of the heading of one of the petitions if they are all alike ; if not, then a copy of each.

I have the honor to be, Sir,

Your obedient servant,

THOS. BOON, ESQ., Inspector, Bothwell. (Sgd.) HENRY TOTTEN.

(*Copy.*)

BOTHWELL, ONT., 13th July, 1889.

HON. A. M. GIBSON,
Provincial Secretary, Toronto.

SIR,—Yours of the 11th is received. I send you a copy of the heading of Orford petition against granting licenses in polling sub-division No. 5.

"TO THE LICENSE COMMISSIONERS OF EAST KENT.

We your petitioners, ratepayers and electors in polling sub-division No. 5, Orford, believing that the licensing and sale of intoxicating liquors are opposed to the best interests of our village and the advancement of right and good morals in our community. For the past three years we have enjoyed quiet and peace, which we feel would be greatly disturbed by the sale of intoxicating liquors being granted. We also beg to call your attention to the fact that one of the places asking for license is adjoining the Public School, which has an attendance of about 150 children a good portion of the year, and the very common consequence of the open bar-room would be very objectionable to us. We therefore pray your honorable body not to grant any licenses for the sale of spirituous or malt liquors in the village of Highgate for the year 1889 and 1890.

And your petitioners will as in duty bound ever pray."

Said petition contained by the decision of Township a majority of 1½ of the electors. I have not got petition of Township of Harwich, it being still with the clerk of the township. I was at his place yesterday the 12th and he told me that he would proceed with the petition at once, that it was not for any fees for himself, but that he thought he had no right to pay a constable for serving summons, but that he would do without that and merely go through the assessment roll and make his return. When I get the petition back from him I will send you a copy.

I have the honor to remain

(Sgd.) THOS. BOON,

Inspector E. Kent.

(*Copy.*)

TORONTO, 15th July, 1889.

SIR,—I am directed by the Hon. the Provincial Secretary to acknowledge receipt of your favor of the 13th inst., enclosing a copy of the heading of a petition received by the Board, and signed by a number of electors, praying that no licenses be granted in polling subdivision No. 5, Orford.

According to the ruling of the Court in the Essex Centre case, Pizer *v.* Fraser, this petition would no doubt be held inoperative, and the Board would not be bound to act upon it.

If the petition in the Harwich case is similarly worded the Board would not be bound by it.

I have the honor to be,

Sir,

Your obedient servant,

(Signed) HENRY TOTTEN.

THOS. BOON, ESQ.,
Inspector.
Bothwell.

(*Copy.*)

RIDGETOWN, Ont., Aug. 26th, 1889.

R. P. WRIGHT, ESQ.,
Dresden, Ont.

Re HIGHGATE LICENSE.

DEAR SIR,—I am accepting service for all the Commissioners in the Highgate License question, and also the defendants, the hotel-keepers themselves.

Shall I also accept service for you?

It will likely be a saving of expense as in these cases only one bill of costs is usually taxed.

Kindly let me hear from you at once in this matter.

Yours truly,

(Signed) N. MILLS,
W. L.

(*Copy.*)

BOTHWELL, Ont., 7th Sept., 1889.

Hon. A. M. GIBSON,
Provincial Secretary,
Toronto.

SIR,—At the meeting of the Board yesterday I was instructed to forward you the enclosed papers having reference to No. 5 polling subdivision of Orford, but the Commissioners had signed and issued the licenses before being served with the papers.

Mr. R. P. Wright also received this letter from N. Mills and laid it before the Board yesterday, and the others say that they have not engaged him.

The Board wish to know whether it will be necessary to engage any person to appear on their behalf, the case was before the Court in Toronto and Patterson has been allowed to sell, but the case against Leitch was laid over to the Court in Chatham on the 23rd of this month.

You will please send me one Township Tavern License to be issued in the Township of Harwich; if you can send me the one returned, as it is already signed, it will save calling a meeting of the Board to sign the same.

I have the honor to remain,

(Signed) THOS. BOON,
Inspector E. Kent.

(*Copy.*)

TORONTO, 9th September, 1889.

SIR,—I am directed by the Hon. the Provincial Secretary to acknowledge the receipt of your favor of the 7th inst., enclosing two notices of motion for an injunction, one dated on the 26th and the other on the 29th day of July last, having reference to the issue of licenses to Messrs. Patterson and Leitch, also a letter written by a Mr. N. Mills, who says he has been accepting service for the Board as well as the applicants for license.

You ask for information and advice and say that "the case was before the Court at Toronto and Patterson has been allowed to sell, but the case against Leitch was laid over to the Court at Chatham."

The notices indicate that a motion would be made to the Court to restrain the Board from granting licenses, this with the meagre information above, which conveys no intelligence of moment, is the manner in which you advise this Department concerning proceedings in your district, and upon which you ask to be advised.

Why can you not advise the Department fully and give some information upon which some conclusions may be based. No conclusion whatever can be formed from the trifling information given.

What became and what was the result of the application for an injunction. Did the Court make an order? If so, what was it. Who attended on behalf of the Commissioners? What do you mean when you say, "Patterson has been allowed to sell, but the case against Leitch was aid over to the Court in Chatham on the 23rd of this month?"

Lastly, if proceedings have been pending in the Court here and papers have been served for the past six weeks, why has this Department not been advised earlier that counsel might be retained and directions given if necessary ?

I have the honor to be,
Sir,
Your obedient servant,

(Signed) HENRY TOTTEN.

THOMAS BOON, ESQ.,
Inspector,
Bothwell, Ont.

———

(*Copy.*)

BOTHWELL, Ont., 11th September, 1889.

Hon. A. M. GIBSON,
Provincial Secretary,
Toronto.

SIR,—Your letter of the 9th inst. to hand, and in reply that at the meeting of the Board at Ridgetown on the 22nd July, and after reading your letter of the 15th July, the Board granted Patterson and Leitch Tavern Licenses in Highgate, in the Township of Orford.

Mr. N. Mills appeared before the Board on behalf of Patterson and Leitch, and Mr. Shoebottom on behalf of those objecting to license, and Mr. Shoebottom informed the Board that they would apply to the Courts for an injunction to prevent them. The licenses were received by me from you and I forward them to Chairman, and he sent them to Mr. R. P. Wright for his signature, and they were returned to me. Mr. N. Mills came over from Ridgetown to me at Bothwell for some affidavits regarding the matter and told me they had got an injunction; the next day I got the licenses returned, signed by the Board. I wrote to Mr. Mills asking him if I would be committing contempt of court if I issued them to Patterson and Leitch, he answered that I would not, but that he would see the Chairman of the Board and ascertain if they were signed and sent to me before they had been served with the writ ; he then wrote me that they had been sent to me signed before the writ had been served and that I had better issue the licenses, which I done. A week or so after Mr. Mills came to Bothwell to copy the minutes of the Board from the time that applications had been received for licenses and to which I made affidavits.

I heard nothing more about the matter until I saw in the local papers that Patterson had been allowed to sell by the courts, and that Leitch's case had to go to the court in Chatham on the latter end of August.

I met Mr. R. P. Wright in Chatham, and he told me he had received a letter from Mr. N. Mills—that is the letter forwarded—and we thought that I had better call a meeting of the Board and see what action should be taken, if any. At that meeting I was instructed to write to you. This is the whole matter so far as I am aware.

I intend to be in Ridgetown to-day and I will show your letter to Mr. N. Mills, who has been acting for Patterson and Leitch in this matter, and get them to drop you a letter about what has been done and how the case stands.

I have the honor to remain,

(Signed) THOS. BOON,
Inspector E. Kent.

(*Copy.*)

TORONTO, 10th October, 1889.

SIR,—Mr. Mills has forwarded to this Department a statement of the claim preferred by Mr. Gosnell regarding the issue of licenses in the polling subdivision of Orford, in which petitions were served upon the Board, and in which injunctions were granted against Patterson and Leitch.

This Department would like to be informed if licenses have been issued to Patterson and Leitch, and if they are now selling thereunder.

It has heretofore been thought advisable not to interfere with the process of law, but let Mr. Gosnell and Messrs. Patterson and Leitch fight it out, but on the receipt of the plaintiffs claim the matter has been reconsidered, and I am directed by the Hon. the Provincial Secretary to enquire if an appearance has been entered by Mr. Mills for or on behalf of the Board, if so, to request you to obtain from the chairman a consent in writing to change the solicitor from Mr. Mills to Thomas Langton, Esq., of Toronto, such consent to be forwarded at once and be signed by the chairman for or on behalf of the Board.

I have the honor to be,
Sir,
Your obedient servant,

(Signed) HENRY TOTTEN.

THOS. BOON, ESQ.,
Inspector,
Bothwell, Ont.

(*Copy.*)

RIDLEY P. O., Oct. 14th, 1889.

To the Honorable
PROVINCIAL SECRETARY,
Toronto.

DEAR SIR,—In reply to your letter of the 10th inst., addressed to Inspector Thomas Boon, Bothwell, beg to state that licenses were granted and issued to the applicants, Patterson and Leitch, hotelkeepers, in the Village of Highgate, Orford.

Messrs. Scott, Gosnell & Co., plaintiffs in the case, obtained an injunction against issuing licenses to Patterson and Leitch some little time after the issuing the said licenses.

The injunction against Patterson was dismissed and he is now selling under his license; Leitch I am informed is not selling, awaiting the decision of the Court at Chatham.

I would conclude from Mr. Boon's letter, which I enclose herewith, that Mr. Mills solicitor has entered an appearance on behalf of the Board, possibly with instructions from the hotelkeepers Patterson and Leitch.

The License Board will cheerfully comply with any change desired, and hereby consent to a change of solicitors in the case, Thomas Langton, Esq., instead of N. Mills, Esq.

I am, Sir,
Your obedient servant,

(Signed) ISAAC SWARTHOUT,
Chairman License Board.

(*Copy.*)

TORONTO, February 20th, 1890.

Re GOSNELL *v.* SWARTHOUT.

In the judgment recently rendered in the above case reference is made to the absence of any certificates from you in connection with the applications for license of Patterson and Leitch as provided for by sec. 11 of "The Liquor License Act," and I am directed by the Hon. Provincial Secretary to request you to furnish the department with your reasons for the omission, and also any further information you may have that will throw any light upon the case.

I have the honor to be,
Sir,
Your obedient servant,

THOS. BOON, ESQ.,
License Inspector,
Bothwell.

(Signed), HENRY TOTTEN.

(*Copy.*)

BOTHWELL, 21st February, 1890.

Hon. J. M. GIBSON,
Provincial Secretary,
Toronto.

SIR,—Your letter of the 20th inst. to hand, and in reply have to state that no forms of Inspectors' Certificates was sent me along wtth applications, so that I used a blank book which gave the information, namely, the number of bedrooms and other rooms in the hotel and number of stalls in stables, said book along with the book furnished by the department containing the applications, sureties, report and how disposed, was laid before the Commissioners, and was also produced at the trial of *re* Gosnell *v.* Swarthout.

In reference to the meeting of the Board on the 22nd July, both parties, for and against, were heard through their lawyers, and the Board made no promise of giving them notice whether they would take up the matter and grant license. The meeting adjourned to dinner and the parties could have attended in the afternoon as the meeting was open to the public. The Board thought that from your letter of the 15th July, that they were not bound by the petition, and having been served with a notice demanding a license for the parties, or that they would apply to the Courts for a writ; they therefore granted the license and were signed and issued before any papers were served in the case of *re* Gosnell *v.* Swarthout.

I have the honor to remain,

(Signed) THOMAS BOON,
Inspector East Kent.

(*Copy.*)

GOSNELL *v.* SWARTHOUT AND OTHERS.

To the Honorable,

The PROVINCIAL SECRETARY,

SIR.—In accordance with your request contained in your favor of the 18th instant, in reference to this matter, I beg to report as follows :

The majority of the points raised in the judgment of Robertson, J., bearing against the irregularities in the actions of the Commissioners and the Inspector can be answered by the fact that the Canada Temperance Act was in force in this county on the 1st of April last, and the vote of the people as to whether it would or would not remain in force was not taken until the 4th of April, 1889, it was therefore impossible to comply with the provisions of sec. 11 and the sub-sections thereto. As regards notices, publications, applications, etc., being necessary, and the Inspector had so understood his duty in that respect, and gave testimony verifying his action at the trial, it was understood by him as by all other Inspectors throughout the Province, that such notices and proceedings as were required by the Act, to be issued before the 1st of April must be dispensed with if the Canada Temperance Act were in force until after the 1st April.

As this case was a special one coming within the discretion of the Commissioners, sub-sec. 3 of sec. 8, chap. 194, R.S.O., and the amendment thereto, chap. 11, sec. 1, of 1889, Ont., puts it clearly beyond the necessity of the Commissioners to comply with sec. 11 and the sub-section thereof.

As to the Inspectors report of his examination, etc., the Inspector, as the evidence shows, did report and to the satisfaction of the Commissioners though his written report was meagre, yet it was written and in his possession as clerk of the Board of Commissioners and open to inspection by any ratepayer of the municipality.

As to the action of the Commissioners in granting the licenses, the evidence is strong and conclusive to the effect that the Commissioners did not promise to give further notice except in the event of their requiring information, or in the event of their reconsidering the matter. The evidence of Isaac Swarthout, the Chairman of the Board, the Inspector and the other Commissioners, seem to me to be conclusive on this point.

I enclose you herewith a copy of the minutes of the proceedings at the various meetings of the Board, which minutes were taken and kept by the Inspector as the Secretary of the Board, which minutes I should consider the strongest evidence of what took place.

There was also evidence of what took place at the time of the circulation of the petition against the granting of the licenses to the Highgate hotels ; you will see by the minutes of the meeting of the 17th June, that there was the most inexcusable fraud and misrepresentation on the part of those who circulated the petition.

As to the petition itself it is not in my opinion in the form prescribed by s.-s. 14 of sec. 11 of the Act, nor is it directed against any named applicant as required by the sub-section. It could not under these circumstances have any binding effect upon the Commissioners ; you will see by the petition, a copy of which I enclose, that this is the case, and that it was as in the case of Pizer *v.* Fraser, no effectual curb upon the action of the Board of Commissioners.

I further say that I acted for the defendants Leitch and Patterson in their application for licenses for their respective houses, and say that they did nothing more than was requisite to bring their cases before the Board in an intelligent manner, and I say that the Board and Inspector did act in these cases in an honest and upright manner and to the best of their ability. I believe that a careful perusal of their proceedings will convince you of this fact.

That the action should have been dismissed is clear, but that it should have been dismissed without costs is a great injustice both to the Commissioners and hotelkeepers, but especially to the hotelkeepers against whom no evidence was offered during the whole of the trial, except to show that the Commissioners did not act properly in granting a license to Patterson.

Trusting that this report of the matter will be satisfactory to the Department,

I have the honor to be.
Sir,
Your obedient servant,
(Signed), N. MILLS.

(*Copy.*)

MINUTES OF COMMISSIONERS.

Minutes of meeting of License Commissioners for East Kent, held at Thamesville, on the 23rd April, 1889, all the members present.

Minutes of last meeting read and adopted.

A petition was read from No. 5 polling sub-division, Orford, said to contain a majority of the electors, praying that no licenses be issued in that sub-division. Two petitions were presented from the vicinity of Highgate, praying that a license be issued to the Victoria hotel. One petition was also presented praying that a license be granted to Mr. Patterson for his hotel in Highgate. Several parties were heard before the Board on both sides of the question.

After some business being done the Board adjourned to one o'clock The Board met again at one o'clock. The Inspector read his report on applications, when the Board took action and granted a number of licenses.

The applications of James E. Patterson and James N. Leitch were laid over.

The Inspector was instructed to forward the petitions to the clerk of the Township to await his decision.

The Board then adjourned.

(Signed), ISAAC SWARTHOUT,
Chairman.

(*Copy.*)

Minutes of meeting held at Thamesville on the 21st of May, 1889, present, Messrs. R. P. Wright and Archibald McDiarmid.

Minutes of last meeting were read and adopted.

The report from Township of Orford regarding petitions against licenses in Highgate were read and was laid over to next meeting. His account for services was ordered to be sent to Department to ascertain whether it should be paid.

After other business the meeting adjourned.

(Signed), ISAAC SWARTHOUT.

Minutes of meeting held at Ridgetown on the 17th June, 1889, present Messrs. Swarthout and McDiarmid.

Minutes of last meeting were read and adopted.

Mr. N. Mills, lawyer, of Ridgetown, came before the Board on behalf of several parties who had signed the petition of No. 5 polling sub-division, Orford, praying that no license be granted, and that they had signed such petition under misrepresentation, and asking that the Board should hear those parties. Several of said parties were heard, and the Board decided that they could do nothing under the circumstances.

After some other business the meeting adjourned.

(Signed), ISAAC SWARTHOUT.

(*Copy.*)

Minutes of meeting held at Ridgetown on Monday the 22nd July, 1889. All the Board present.

Minutes of last meeting were read and adopted.

The Inspector read notices which had been served upon him by Mr. N. Mills, of Ridgetown, demanding certificates to enable James E. Patterson and James A. Leitch, of Highgate, in the Township of Orford, to enable them to get tavern licenses.

The Inspector read the correspondence with the Department regarding the notices from Mr. Mills, and also that the department had requested a copy of the heading of petition from polling sub-division No. 5, Township of Orford.

Mr. Mills appeared before the Board on behalf of the applicants for license, and Mr. Shoebottom on behalf of those praying that no license be granted. Both gentlemen were heard.

The Board adjourned to dinner.

After dinner it was moved by Mr. Wright and seconded by Mr. McDiarmid, and carried, that James Leitch be granted license.

It was then moved by Mr. Wright, seconded by Mr. Swarthout, and carried, that James E. Patterson be granted license.

The Inspector was instructed to write to the Department for three tavern licenses.

(Signed) ISAAC SWARTHOUT.

(*Memorandum.*)

PROVINCIAL SECRETARY'S OFFICE,
TORONTO, February 21st, 1890.

GOSNELL *vs.* SWARTHOUT.

The facts connected with this case are pretty fully set out by Mr. Justice Robertson in his judgment. The Scott Act came into force in May, 1885, and on 4th April, 1888, a vote on the repeal was taken in the County of Kent, the majority favoring repeal. The vote on repeal would not take affect until an Order in Council had been passed by the Dominion Government and published in *The Canada Gazette*. This order was not passed and gazetted until the 18th day of May following.

Until the order had been passed and gazetted the Scott Act remained in full force and the Boards of Commissioners and Inspectors were charged with its enforcement, and no license could issue in the district.

In some counties, it is true, some parties in anticipation of repeal, filed their applications for licenses after the vote had been taken and some from the same cause before the vote had been taken. Until the Act had been repealed no action could be taken by the Boards of Commissioners upon the applications received.

Mr. Justice Robertson commented very severely upon the conduct of the Board and Inspector for East Kent for their dereliction of duty as regards the requirements of section 11 and sub-sections thereof of the Licehse Act. From a careful reading thereof it will be seen that they have reference entirely to licenses to be granted on the 1st day of May, that is, to licenses to be granted from year to year in districts in which the License Act is in force.

Sub-section 2 provides that any petition for a tavern license, *which is to take effect on the 1st day of May*, shall be filed with the Inspector, etc., etc.

Sub-section 5 directs that the Board of Commissioners shall, *on or before the 1st day of April*, fix a day for considering applications being *not less than one week prior to the 1st day of May*, and the Inspector shall publish the date of such meeting at least 14 days before the day of the meeting.

Sub-section 6. The Inspector *shall at least 14 days before the first meeting to consider applications* cause to be published the name of the applicant for license, etc.

The omission to discharge the duties mentioned in sub-sections 5 and 6 are some of the reasons for the finding by the Judge "that the evidence discloses a most reckless irregularity in the manner of granting licenses."

As I have said, the Order in Council repealing the Act was not gazetted until the 18th day of May, and until it had been gazetted no one could know when the Act would be repealed.

Under the Scott Act a certain time must elapse after the vote before the order could be passed. This time is given to enable parties dissatisfied with the vote to file their objections. If objections are filed the repeal may be delayed indefinitely, consequently no Board or Inspector would be justified in taking any proceedings in connection with the issue of licenses until the order had been passed and gazetted; in fact, Boards and Inspectors were sometimes specially directed by the Department not to take an steps lest their action might prejudice public sentiment one way or the other.

You will thus see that the Board and Inspector could not legally comply with the requirements of sub-sections 5 and 6 of section 11 of the License Act, and the comments and finding of the Judge seem to have been unnecessarily severe.

As to the petition filed with the Inspector under s. s. 14 of section 11, against the granting of licenses it would appear according to the certificate of the clerk that a sufficient number of the electors had originally signed it, but before the petition had been acted upon a number appeared before the Board and represented that they had been induced to sign upon a misrepresentation and desired to withdraw their names. This, Mr. Justice Robertson holds, they had a legal right to do and their withdrawal voided the petition, as the required number had not then signed. A case in support of this view is cited by the Judge, Misner *vs.* Wainfleet, 48 U. C. Q. B.

The absence ef the duties to be discharged by the Board and Inspector under section 11 and sub-sections thereof are the reasons assigned by the Judge for his refusal to grant us costs.

I have shown the impossibility of complying with these requirements in counties in which the Scott Act had been in force.

The section has been framed to meet and apply to cases in which the License Act is in force, and the impossibility of carrying out the provisions in Scott Act counties is the best evidence that it was never intended to apply to such cases.

By the Act of last session sub-section 3 of section 8, which provides that under special circumstances licenses may be issued after the 1st day of May if the applications had been received on or before the 1st day of April, was amended and authority given to Boards of Commissioners, in counties in which the Scott Act had been repealed, to grant licenses at any time after the first day of May wholly irrespective of the date of the application.

It had been ascertained by experience that in Scott Act counties after the repeal matters were in a chaotic and confused state, and months would elapse after the date of the order repealing the Act before parties learned the fact and applied for licenses. The applications would be filed irregularly and at different times during the year, and it would therefore be impossible for any Board of Commissioners to fix a special day for holding a meeting at which all applications would be considered.

As to the Judge's comments upon sub-section 21 of section 11 : the propriety of its introduction and forming part of the License Act, was fully discussed upon the floor of the House, and after due consideration it was accepted by the members of the Legislature as one which should be embodied in the Act.

About the end of June, and before licenses had been granted, the Board and Inspector were served with notices signed by Leitch demanding his license. Accompanying the notice was a communication, signed by Leitch's solicitor, stating that he had been instructed by Leitch, in view of the decision of the High Court of Justice in the case of Pizer *vs.* Fraser, to take the matter into court unless the license was granted at once.

On the 14th of July copies of the form of petition used against Leitch, and filed with the Board, were received from the Inspector, and the Department was asked, in view of the notice from Leitch and the petition against his license what action the Board should take.

On the 15th of July the Inspector was advised "that according to the ruling of the Court in the Essex Centre case, Pizer *vs.* Fraser, this petition would no doubt be held inoperative and the Board would not be bound to act upon it."

On the 22nd of July the Board met and granted licenses to Patterson and Leitch and one other.

Shortly after the petitioners applied to the courts for an injunction restraingin the issue to Patterson and Leitch.

An interim injunction was granted as against both Patterson and Leitch, and on the return the order was discharged as against Patterson and an issue was directed to be tried in Leitch's case, on the ground, I believe, that the petition in his case specified that his premises were in close proximity to a school house, and objected to as provided by sub-section 8 of section 11.

I believe it to be a fact that prior to the introduction of the Scott Act Leitch's premises were licensed, and the school house was built, adjoining his premises, during the time they were so licensed. Had the Scott Act not been introduced electors would have had the right to object by petition to the granting of the license upon the grounds set forth, but it would have rested with the Board to grant or withhold the license in their discretion. The electors could not then have used the provisions of sub-section 14 to prohibit the license altogether, or prevent the Board from exercising their discretion, as they endeavored to do after the repeal of the Scott Act.

There were certain equities attached to Leitch's premises which the Board no doubt considered in connection with his application, and his threat of legal proceedings would also have some weight when exercising their right to grant or withhold the license—a power vested wholly in the discretion of the Board by the statute.

The Board was not bound by the petition for three reasons :—1st. The licenses applied for were not to take effect from 1st May, and the provisions of section 11 did not apply. 2nd. Although originally signed by the requisite number the withdrawal of

signatures would in any case have deprived it of any binding force. 3rd. Justice Street's decision in Pizer *vs.* Fraser, the Essex Centre case, makes it clear that the petition did not comply with the terms of the Act.

A copy of the petition is appended to this memorandum.

Respectfully submitted,

(Signed) HENRY TOTTEN,
Chief Officer.

(*Petition.*)

To the License Commissioners of East Kent.

We, your petitioners, ratepayers and electors in polling sub-division No. 5, Orford, believing that the licensing and sale of intoxicating liquors are opposed to the best interests of our village, and the advancement of right and good morals in our community. For the past three years we have enjoyed quiet and peace, which we feel would be greatly disturbed by the sale of intoxicating liquors being granted. We also beg to draw your attention to the fact that one of the places asking for license is adjoining the Public School, which has an attendance of about 150 children a good portion of the year, and the very common consequence of the near proximity of the open bar-room would be very objectionable to us.

We therefore pray your honorable Board not to grant any licenses for the sale of spirituous or malt liquors in the Village of Highgate for the years 1889 and 1890.

And your petitioners, as in duty bound, will ever pray.

(Signed) JOHN J. GOSNELL,
And 102 others.

RETURN.

To an Order of the Legislative Assembly passed on the 19th day of February, 1890, for a Return showing what applications have been made for payments out of the Consolidated Revenue under the provisions of Section 4 of Chapter 4, 43 Victoria, in respect of the dues on pine trees. Also, showing what is the aggregate sum which, up to the 1st day of February last, the patentees of lands, subject to the provisions of the Act, are entitled to receive out of the dues collected on pine trees cut after the date of their patents.

By Command,

J. M. GIBSON,
Secretary.

Provincial Secretary's Office,
Toronto, 27th March, 1890.

RETURN ordered by the Honorable the Legislative Assembly the 19th day of February, 1890, showing what applications have been made for payments out of the Consolidated Revenue under the provisions of Section 4 of Chapter 4, 43 Victoria, in respect of the dues on pine trees. Also, shewing what is the aggregate sum which, up to the 1st day of February last, the patentees of lands, subject to the provisions of the Act, are entitled to receive out of the dues collected on pine trees cut after the date of their patents.

NAME OF APPLICANTS.	Township.	Lot.	Con.	Remarks.
Charles Wadsworth	Oakley	10	6	
T. Keown	Franklin	7	11	
John Newsom	Stephenson	8	2	
Richard Gordon	Wilson	5, 6	14	
Alfred W. Ward	Chaffey	31, 32	7	
do do	do	31, 32	7	
do do	do	31	7	
W. R. Parker	Sinclair	2, 3	13	
W. W. Snow	Machar	10, 11	2	
H. N. Lasell	Brunel	2	1	
		2	2	
W. W. Brown	Machar	12, 13	2	
Alfred Hall	Ryerson	33	3	
James Pruntz	Machar	8, 7	1	
Richard Pearse	Anstruther	34	8	
Jacob McConnell	Nipissing	17	8	
		17	9	
John Mooney	Machar	10, 11	3	
John Patterson	Wood	7, 8	16	
Charles Hague	Dungannon	N. ½ 24	10	
Thos. Felthouse	Ryerson	28, 29	4	
Andrew O'Neil	Faraday	10	16	
N. Stromberg	Wood	19, 20, 21	9	
Joseph Paisley	Cardwell	22	5	
Francis Widders	Sinclair	3, 4	10	
A. Luckasabitch	Sherwood	5, 6	3	
Albert Taplin	Oakley	13	6	
do	do	13	5	
Noble Potter	S. Canonto	33, 34	4	
Harry Spong	McLean	4	5	
N. Spicer	Draper	4	2	
Andrew Fraser	Macaulay	14	10	
Ira Mayhew	Nipissing	18	9	
do	do	18	9	
J. Scully	Radcliffe	31	5	
Wm. Holditch	Machar	3	2	
John Rose	Methuen	10, B	12	
John Haw	Macaulay	14	10	
Alexander Stewart	Lount	6, 7	6	
do	do	6, 7	6	
H. Livingstone	Snowdon	14	8	
Thos. Salmon	Franklin	14	3	
do	do	14	3	
S. Wilson	Himsworth	6, 7	23	
S. Crocker	Strong	22, 23	12	
Henry Smith	do	30, 31	1	
T. D. Stanley	Joly	2	22	
		2	33	
Ann Hayes	Strong	31	12	
John Elmenski	Sherwood	9	9	
N. Micks	Perry	22	6	

SUMMARY.

Total number of applications		48
Applicants paid prior to the 1st February, 1890	25	
Applicants paid since the 1st February, 1890	9	
Applicants being investigated	3	
Applicants not entitled at date of application, the amendment to the Free Grant Act, 1880, applying only to pine cut after 30th April following date of patent for lots covered by license	11	
		48

Aggregate sum paid under the Act up to 1st February, 1890	$880 98
Amounts paid since 1st February, 1890	150 23
Total	$1,031 21

AUBREY WHITE,
Assistant Commissioner.

Department of Crown Lands,
(Woods and Forests Branch),
24th March, 1890

(No. 75.)

Return to an Address to His Honour the Lieutenant-Governor of the twenty-first day of March, 1890, praying that he will cause to be laid before the House, copies of any papers, memorials or petitions addressed to the Lieutenant-Governor in Council, or to any member of the Government, since the late partial destruction of the Provincial University building, for or against the maintenance of a residence in connection with that institution. Presented to the Legislature 31st March, 1890. *Mr. Balfour.* (*Not printed.*)

ANNUAL REPORTS

OF THE

I.—ONTARIO BEE-KEEPERS' ASSOCIATION,

II.—ONTARIO POULTRY ASSOCIATION,

III.—EASTERN ONTARIO POULTRY AND PET STOCK ASSOCIATION.

1889.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

TORONTO:
PRINTED BY WARWICK & SONS, 68 AND 70 FRONT STREET WEST.
1890.

ONTARIO BEE-KEEPERS' ASSOCIATION,

1889.

To Hon. Charles Drury, Minister of Agriculture:—

SIR,—In presenting you a report of the business done by the Ontario Bee-Keepers' Association during the past year, it is hoped that you will find that the Association is trying, and not without success, to advance the industry of bee culture.

The number of members on the roll for the past year, 1889, was 162, this being less than last year. The falling off in membership, no doubt, was partly due to the year of 1888 being such an unprofitable one for the bee-keepers of the Province. There are also five honorary members of the association.

There have been seven local bee-keepers' associations in affiliation with the Ontario B. K. A. the past year, with a total membership of 145. Of these 44 are also members of this association. You will notice that the total membership of the association and the affiliated societies is 263. The societies in affiliation the past year were as follows: Middlesex Bee-keepers' Association, Western Ontario Bee-keepers' Association (members being in Essex and Kent principally), Bruce Bee-keepers' Association, Oxford Bee-keepers' Association, Brant Bee-keepers' Association, Norfolk Bee-keepers' Association, and the Haldimand Bee-keepers' Association.

The reports from these affiliated societies are that the year of 1889 has been a very fair one for the production of honey and the increase of bees. Six of the affiliated societies report 2,961 colonies of bees last spring (1889) and 5,094 colonies in the fall of 1889, an increase of 2,133 colonies or 72 per cent., which is very fair. The amount of honey reported as the production from the above colonies of bees is 26,275 lb. of comb honey and 132,365 lb. of extracted honey, being an average of 9 lb. of comb honey and nearly 45 lb. of extracted honey per hive, or if we let one lb. of comb honey equal to two lb. of extracted the average yield per colony from the stands in spring would be about 63 lb., which may be considered very fair.

The reports from these counties may be taken as about an average of the remainder of the province.

The members of the association the past year were each sent by the Board an Italian queen bee for the purpose of improving the strain of bees in their apiaries. The queens supplied have given general satisfaction.

Each of the affiliated societies was allowed by the Board the sum of $30, to be expended in prizes at local agricultural fairs, for paying for lectures on bee culture, and for advertising local society meetings. This money, as far as reported, has been largely expended in prizes at agricultural fairs, the balance being expended for lectures and advertising, and in some cases a balance being on hand.

The sums of $20, and $10 were given by the Board to the Toronto Industrial Exhibition Association, and the Canada Central Fair at Ottawa, respectively, of be expended in prizes for the best and most tasteful and attractive displays to honey. The exhibit of honey at Toronto last fall was very good, due in part, no doubt, to the grant made by this association as above. In regard to the exhibit of honey at Ottawa we cannot report at present.

The financial standing of the Association is very good, there being a balance on hand of $299.51. The total amount of money received into the treasury the past year was $1,145.75, and the expenditure $846.24. You will notice by the treasurer's report from what sources the amounts were received and how expended.

During the year there had been three meetings of the Board held, one of the executive committee, a special meeting of the association and the annual meeting, The first meeting of the board was at Owen Sound on the 9th of January, 1889. for the purpose of appointing a secretary and treasurer, and to appoint delegates to other societies. On June 20th the committee appointed to arrange for the supply of queens to members of the association met in the city of Guelph.

The next meeting of the Board was in the city of Brantford on the 6th of December, for the purpose of arranging a programme for the annual meeting to be held at Belleville. The next board meeting was at Belleville on the 7th of January, 1890, for the purpose of winding up the year's business. The special meeting of the association was held at Brantford on the 4th, 5th and 6th of December in connection with the International Bee-keepers Association of America. The joint meeting was a success, there being a large attendance of bee-keepers of the Province and a number from the United States. At this meeting the Ontario Bee-keepers' Association affiliated with the International Bee-keepers' Association.

W. COUSE, Secretary.

STREETSVILLE, January 27, 1890.

ANNUAL MEETING AT BELLEVILLE.

The annual meeting was held in the city of Belleville on the 7th and 8th of January, 1890. Rev. W. F. Clarke, President, occupied the chair.

The following statement of the treasurer, duly audited was read and adopted:

TREASURER'S STATEMENT.

R. McKnight, treasurer, in account with Ontario Bee-Keepers' Association.

—	RECEIPTS.	—	—	EXPENDITURE.	—
1889.		$ c.	1889.		$ c.
Jan. 8	Balance in hand from last audit.	455 75		Cash remitted Dadant & Son...	156 00
Sept. 20	Government grant.....	500 00		Duty and expenses on above....	39 23
	Fees from affiliated associations.	30 00		D. A. Jones Co., printing. ...	43 25
	Fees from members	160 00		Grant to 7 affiliated societies ...	210 00
				R. E. Smith, queens supplied members	81 95
				Grant to Toronto and Ottawa fairs	30 00
				Expenses of Association.....	148 00
				Sundries	137 81
				Balance on hand.....	299 51
		1,145 75			1,145 75

Audited and found correct. A. H. WALLBRIDGE, W. J. BROWN, } Auditors.

BELLEVILLE, Jan. 8th, 1890.

Immediately after the adoption of the treasurer's report came the following paper by Mr. Allen Pringle, of Selby.

THE SUNSHINE AND SHADOW OF APICULTURE.

Nearly every occupation (and want of occupation) under the sun has its sunshine and its shadow, its ups and its downs. From the king to the beggar and from the millionaire to the tramp with not a meal of victuals ahead of him, there is the cloud alternating with the sun.

And certain it is that the preponderance of cloud in the drama of life is not always with the beggar or tramp. "Uneasy," it is said, "lies the head that wears a crown" (the head that wears a sting for half a minute is also uneasy for a time); and the "Divinity that doth hedge a king" sometimes fails to hedge, and his regal tenure, in the case of the present Dom Pedro, is painfully uncertain, sometimes as precarious and uncertain as the beggar's next meal.

But without further homily, we may as well admit at once that the apiarist, even the apiarist, has cloud mixed with his sun, and sometimes mixed with a vengeance. Just how much sunshine or shadow there may be in any particular case, depends much upon the particular individual himself or herself. Some people, left-handed people as it were, are always in a cloud, or hot water, no matter what business they are in or out of. They manage to raise a cloud of dust about their own eyes and ears, and although old Sol may be smiling on them from above they see none of him; and the music of the spheres never reaches their ears. These are the pessimists. Others again see all the sunshine within their visual or mental range, and hear all the music nature or fate vouchsafes.

The bee-keeper may, however, among all others, be justly described as "Dot happy bee man," of whom our American cousins Secor and Miller have so eloquently sung. The old saying that it is better to laugh than cry over the misfortunes of life (even though the misfortune be a pointed one) is on the whole, good—very good advice, so long as the laugh carries with it the wholesome lesson of experience to avoid a repetition of the misfortune. Of course every bee-keeper who is a philosopher as well, will bear the pointed and barbed misfortune as best he can and try and ward it off next time.

Now taking the bee-keepers, who are bee-keepers, all in all together, I think they have more sun than cloud in their pursuit of honey. Possibly this may be an optimistic view and the writer may be looking through the clouds into the sun with luminous glasses. Be this as it may he takes pleasure and pride in saying that his own apicultural horizon has been encouragingly free from clouds. In other words he not only derives a high order of mental pleasure and profit from the pursuit, but makes it pay in dollars and cents from year to year. You may perhaps put this and that together and draw a conclusion not flattering to the speaker's modesty. This, viz., that he has not had much cloud, and that, viz: that the amount of cloud depends mostly upon the man himself. The conclusion is apparently logical enough but does not necessarily follow from the premises. The whole matter may be explained concisely in one sentence, to wit, he always did love the honey bee and her sting never did hurt him to speak of. Whatever the cause—whether in nature or grace—this deponent is as nearly sting proof as one need desire and be reasonable. I can imagine our worthy ex-president Clarke or our venerable absent friend Father Langstroth, or our versatile cousin James Heddon, whose nerves and blood are, I believe, so painfully responsive to the barbed dart, exclaiming; "This indeed is the cloud of bee-keeping with us beyond even an adverse balance sheet!" I cannot sympathise with such from experience, but I sincerely extend to them my theoretical sympathy, should that be worth

anything. I tell you gentlemen (and ladies) that I have learned, not of myself, but from others; that by far the biggest cloud above the horizon of bee-keeping comes directly from the business end of a business bee. And the fortunate bee-keeper who has a "coat of mail" invulnerable to that lance, (not outside of him but inside of him) has a tremendous advantage in the race over his less fortunate brethren. The bee-keeper, therefore, who can receive that "business end" referred to above, without flinching, and even with equanimity, and can steer clear of most of the other evils and obstacles of the business, and take the inevitable balance of ills like a philosopher, is to be congratulated or is a fit subject for a certain amount of envy as the case may be. On the other hand, those of us whose nerves and blood rebel against a sting, and who are not able to avert the clouds of winter losses, spring dwindling, foul brood and others of less sombre hue, deserve not only our sympathy but our assistance, and I propose now to give my mite of assistance in the shape of a little advice after I have briefly enumerated the sunny and cloudy points of bee-keeping.

The sky of the apicultural novice is, as a rule, remarkably clear, in prospect at least, but when he gets down to business the clouds soon begin to gather.

On a fine morning in spring he gets his first "skep" of bees, and carefully places them in the front yard on a bench under the plum tree. Soon he sees them sally forth in the sunshine and return laden with little golden pellets on their legs, which he joyfully regards as the "stuff they make the honey of." Visions of increase of "skeps" of honey for his table and honey for the market to replenish his purse come up before him and he is happy. In due time his "skep" swarms and he hives the new recruits successfully They go to work. To make a proud beginning in manipulation he now puffs with his smoker, opens the hive and lifts an outside frame of honey from the old colony or parent skep, wings off the young bees according to the book, goes to the house triumphantly with his prize, and makes a magnificent, mellifluous spread for dinner. He is now to all intents and purposes "dot happy bee man" with not a cloud in his sky. The old swarm and the new swarm go on industriously and improve "each shining hour," and everything is lovely with the incipient apiarist. But the whirligig of time brings its changes and its revenges. The new colony has filled up and become strong and ready to swarm. The old "skep" too, in the midst of abundance, has hustled up to the swarming point again, and both take advantage of the sun after a cloud and issue together. They mingle in the air in fraternal greeting, and cluster together in the top of the plum tree.

Our amateur bee-keeper is now in a 'swither' what to do, and quite loses his head. He gets out a table, however, sets it under the tree, and spreads a white sheet over it as carefully as that over the corpse at "Tim Finnigan's wake" and soon to be followed by a similar 'ruction.' Then after washing out the new hive with salt and water and swiping it with a tansy stalk, he stands himself upon the table, holds the hive up with one hand and with the other shakes the bees down. But they miss the hive and fall on his head and down his neck and shirt-sleeves, where the close quarters and the odor of sweat put them in fighting trim instanter. Horror of horrors! He drops the hive and leaps from the table in pain with a cloud of bees about his head. With the exception of this fighting detachment the two swarms rise in the air and make a bee line for the woods, with our now thoroughly demoralized neophyte in limping pursuit to the best of his ability, over fields and fences, through dykes and ditches, till he loses sight of the fugitives and sinks exhausted, his eye-sight by this time being none of the best, peeping out from a head dazed and of most extraordinary porportions. He rests a little, writhes a great deal, then slowly gropes his way back. This is his

first cloud, and a big one it is—in fact it is the "blackness of darkness" to him, for now he can see neither sun or cloud nor anything else. We now gently leave this brother in distress where he is, with our kindest sympathies—all we can offer.

Now, the sunshine of bee-keeping, to put it briefly is this.—first, to be able to take a sting without minding it; second, to winter and spring the bees without loss; third, to steer clear of foul brood; and finally to get a crop of honey each year and sell it at a good price, and the surplus bees ditto. This is what may be properly called sunny and successful bee-keeping and is the grand goal of apicultural ambition, but few there be that find it.

Per contra, the clouds of bee-keeping, summarized are: first, a sting that poisons and pains; second, a winter mortality and spring dwindling that thins the yard: third, foul brood, mice in winter and toads in summer, ants, wasps, spiders beetles, the king bird, the bee hawk, the bee louse, robber flies, etc.; and finally poor crops of honey and unremunerative prices.

These are the clouds though forcunately they seldom bunch up together over the luckless head of any one luckless bee-keeper.

In conclusion I may be permitted, in as brief a manner as possible, to give some advice (only, however, to those who need it, and most of you probably do not) as to how to avert the biggest of the clouds and invite the sunshine.

First, as to stings. In handling bees the prime requisite is to be brave and quiet, to keep cool and handle carefully. Almost equally important is it to keep yourself scrupulously clean in person and apparel, for the bee is fastidious and very ready to resent malodorous offences. Then when so unfortunate as to get stung, rub the stinger out at once by a single smooth motion of the finger over the part stung, and turn the part aside from the bees for a moment till the effluvia, which accompanies the sting and which invites further attack is dissipated.

To attempt to avoid the losses of winter mortality and spring dwindling is a big undertaking involving an extensive knowledge of apicultural science and art as well an extended experience. We all have considerable yet to learn on this subject. The best knowledge I have at present on the subject may be stated in its main points briefly as follows: give every colony plenty of stores for winter, (honey is best) early in the fall (Sept.) so that they may settle down contentedly instead of wearing themselves out looking for winter food. Keep them dry and warm. Put them in winter quarters early before cold weather. Leave lids off. Replace summer quilts by clean cotton ones and cover over with woolen quilts or cotton filled in with wool. Keep the repository at about 45 to 50 degrees. Be in no hurry in getting them out in the spring unless they are diseased or restless. When out, clean them, give them plenty of food, crowd them up, pack them up warm and dry and leave them alone through the spring only when necessary to attend to them. The winter and spring management of which this is an outline I have found successful.

To avoid the origination of foul brood or less formidable diseases in your own yard attend to sanitation. Keep yard and hive clean, and never uncap or behead drones in a weak colony where they are liable to rot instead of being carried out.

The king bird eats queens and drones: use powder and shot on him Against the miller moth there are two remedies, viz: Italian bees and strong colonies of any kind.

To avoid the worry of swarming time and the break neck chasing of

absconding swarms keep your queens clipped; and keep back all after swarms as they are unprofitable as well as troublesome.

How to get a good honey crop when it is going and avoid the cloud of a bad one, would take hours to set forth. I can, therefore, only say here, read the bee journals and the standard works on the subject; learn and profit by your own experience; and then rely upon yourself by using your own best skill and judgment.

To get a good price for your product after you have got it, certain conditions, besides the market are essential. First see that you get it out of or off the hives ripe and in good order, and then preserve it in good order—the comb honey in a warm dry place and the extracted when ripe in a dry cool place. Keep it clean and neat and put up with care and taste to suit your customers. Label and guarantee your product over your own name, giving brief and clear directions how to preserve properly and how to liquify. Then wait till the market opens and a demand arises, instead of rushing your crop out prematurely and taking catch prices. Of course in the case of regular customers, grocers or others—they must be supplied whenever they want it, provided the honey is ripe and fit for market.

Hoping your apicultural sky may be always fairly free from clouds, and that the season of 1890 may be especially successful with you all. I will now conclude.

F. A. Gemmill asked if foul brood could be generated from leaving the decapitated drones to rot in the hive.

Mr. Pringle was of the opinion that a mild type might be generated in this way if the working force was not strong enough to remove the drones. He would not advise the amateur to undertake this method of getting rid of drones. He placed drone comb, where it ought to be, in the upper story for storing purposes if drones got too plentiful.

J. K. Darling said he had uncapped a good deal of drone comb and cut off the heads of the drones, but he had done away with as many of the drones so decapitated as possible, by tapping the sides of the frames on a board, thus shaking out most of the dead drones. His general process of getting rid of the surplus drones was to cut out the drone comb and let the bees build up fresh.

R. McKnight thought that little was left to be said on Mr. Pringle's paper, as he had painted so nicely and attractively the "Sun and cloud of bee-keeping." His subject has been very truly dealt with, and he congratulated Mr. Pringle on its excellency, but he learned for the first time that it was a prevailing practice amongst bee-keepers to cut the heads off drones to get rid of them and he did not think it was a good one. His plan was to cut the comb right out, and he would much rather lose the little comb that was to be destroyed than run any risk of any kind. He generally carried the comb so cut out to the poultry yard where the drones were soon picked out and dispatched.

M. Emigh inquired if "worker" bees were ever eaten by king birds.

Mr. Pringle did not think that king birds would eat live workers. He had noticed king birds take a living queen out of a swarm and the swarn return to the hive.

F. H. Macpherson asked if Mr. Pringle had ever noticed martins eating queens.

Mr. PRINGLE had very few martins in his vicinity and could not say that he had.

F. H. MACPHERSON instanced the experience of a season two years since when it was found almost impossible to procure queens for shipment. The fact was the virgins were by some means destroyed while mating, and after considerable trouble and observation it was found that the martins had been systematically catching them.

R. MCKNIGHT had seen toads eating bees and had very much enjoyed watching a toad make his supper at the entrance of one of his hives.

A. PICKET asked if brood which became chilled in the spring would not produce foul brood. He was of the opinion that it might be produced in that way.

Mr. PRINGLE though, not speaking from experience, saw no reason why decaying bees would not have that effect.

LEGISLATION ON FOUL BROOD.

F. A. Gemmill, of Stratford, brought up the question of legislation on foul brood and after considerable discussion a special committee comprised of Messrs. Gemmill, Picket and Couse was appointed to take up the matter of the advisability of legislating for the suppression and extermination of foul brood.

A motion mas passed agreeing to meet at the evening session in conjunction with the Dairymen's Association of Eastern Ontario, in the city hall.

EVENING SESSION.

A very large joint meeting of dairymen and bee-keepers was called to order at 7.30 p.m., with Hon. Senator Reid in the chair.

Mayor Derbyshire, of Brockville; Prof. Robertson, of Guelph; President Clark, of the O. B. K. A., and Treasurer McKnight spoke at some length and each and all of the addresses were full of instruction and amusement.

A delegation from the city council and board of trade, invited the dairymen and bee-keepers to join them in a banquet the following evening, and short speeches welcomed the delegates attending the Dairymen and Bee-keepers associations to the city.

SECOND DAY.

The first business done was the presentation of

REPORTS OF AFFILIATED SOCIETIES.

The following are the officers of these societies :—

MIDDLESEX.—W. J. Wilson, president; A. W. Humphries, secretary, Parkhill.

BRUCE.—John Harkley, president; D. McKay, secretary, Walkerton.

OXFORD.—Wm. Goodger, president; James E. Frith, secretary, Princeton.

BRANT.—J. R. Howell, president; D. Anguish, secretary, Brantford.

NORFOLK.—J. P. Ryder, president; C. W. Culver, secretary, Simcoe.

WESTERN ONTARIO (Essex and Kent).—George Morris, president; G. C. Scott, secretary, Chatham.

HALDIMAND.—E. C. Campbell, secretary, Cayuga.

Statistics of number of colonies and yield per hive were presented by the various affiliated societies, which are summarised by the secretary of the Ontario association in his report to the Minister of Agriculture.

REPORT OF COMMITTEE ON FOUL BROOD.

Mr. F. A. Gemmill brought in the report of the above committee to the following effect:

The committee recommend that this association appoint a delegation to approach the Minister of Agriculture to secure necessary legislation for the purpose of the suppression of foul brood, and that this committee draft what they might consider a bill, suitable to cover the case and ask the Minister to make it a government measure.—Carried.

THE PRESIDENT'S ADDRESS.

The President's address was then delivered by Rev. W. F. Clarke, who said: The year during which I have had the honor to be President of this Association, has rounded out my quarter of a century of bee-keeping, and this fact naturally suggests a brief review of that period from an apicultural standpoint. At the outset of such a review, a passing reference to my own personal connection with bee-keeping may not be out of order, nor wholly without interest to the members of this Association. During the entire part of the winter of 1863-4, having engaged with the late Hon. George Brown to take editorial charge of the *Canada Farmer* which was to be started in January, and bee-keeping being almost the only branch of practical agriculture of which I had no knowledge, I betook myself to the study of it. My text books were "Langstroth on the Honey Bee," and "Quinby's Mysteries of Bee-Keeping." My only idea was to qualify myself for that part of my editorial work. But I became so deeply interested in the wonders of the hive, that I determined to keep bees myself, and the following spring bought my first stock. During the past quarter century I have kept bees, as I have farmed, chiefly with the pen. A very busy man with many irons in the fire, both sacred and secular, I could never go largely into practical bee-keeping, and the most I have ever had at one time was 28 colonies. I have the honor to be one of the oldest if not the very oldest Canadian writer on apiculture. My first article on the subject appeared in the initial number of the *Canada Farmer* in January, 1864. It was wholly theoretical and embodied the impressions of the pursuit I had derived from Langstroth and Quinby. After I began to handle bees I can truly say, that on no topic of an agricultural nature did I ever write with more or so much interest and pleasure than on bee-keeping.

The era of modern bee literature dates from about the time that I took the pen in hand to write about bees. It was in that year, if I mistake not, that the *American Bee Journal* was started at Washington by the distinguished and lamented Samuel Wagner, from whose son and widow, I, several years after,

purchased that journal and removed it to Chicago, where it still lives and flourishes, the pioneer and patriarch of all the bee journals.

In every department of rural economy there are two classes of active workers; those who have the ability to put their ideas on paper, and those who understand how to "materialize" them as the modern phrase is. If there had been no apiculture writers many of us would never have been bee-keepers; and if there had not been skilful manipulators of bees, the honey industry would never have attained its present proportions. He whom we delight to honor as "Father Langstroth," and who is, without question, the father of modern bee-keeping on the American continent was never a large honey producer; but by his invention of the movable frame hive, the publication of his book and other emanations from his pen, he has rendered services to this pursuit unequalled by any one else who can be named, and deserves a better fate than that of a dependent old age. There need be and should be no jealousy between the two classes of apicultural workers of whom I have spoken. Each ought to highly appreciate and duly honor the other. "One soweth and another reapeth," and let both him that soweth and him that reapeth rejoice together in the result brought about by their joint co-operation. Bee-keeping is often a source of pleasure when it yields no profit in the strict sense. Among the pleasures it brings those who have sought to advance it with their pens, is that of seeing the progress of modern apiculture to which they have contributed. For bee-keeping is a science as well as an art, and no one, in these days, can excel in the art who has not mastered the science. All rule of thumb methods have long ago been exploded, and those will succeed best in the management of bees who bring the most knowledge and the most brains to the business. It is so in dairying and in every other department of practical farming.

The time would fail to speak at all fully of the immense progress which has been made in bee-keeping during the twenty-five years that may be said to be represented in my person. Many old ideas have been abandoned, many absurd theories exploded, many fancy fixings consigned to the limbo where sleep in peace the old bee-gum and box-hive, never more to have a resurrection. In these years we have investigated all known races of bees, except the mammoth and formidable *Apis Dorsata*, whose acquaintance we do not covet. As the result of these investigations in which a Canadian bee-keeper, D. A. Jones, played the most important part, bee-keepers in general have settled down on the Italians, either pure or slightly crossed with that prince of white comb builders, the native bee, as the *ne plus ultra*, the "seek no farther," of honey gatherers. Wonderful advances have been made in queen breeding, and bee-keepers now rival the breeders of thoroughbred horses, and short horn and other races of choice cattle, in the skill and success with which they breed the best types of "the little busy bee." Vast improvement has also been made in the production and marketing of honey. The extractor has come in during the last quarter century. So has the neat little section-box. So have innumerable styles of attractive packages. In that time too McKnight had come to the front, the Barnum of bee and honey exhibits. Box honey used to be a chaotic conglomeration of nondescript honey in the comb; now it is a case containing a dozen or so of one-pound sections finished to a T by the bees themselves. "Strained honey" used to be an indiscribable compound of nectar of flowers, larvae juice, pollen and grains of wax; now extracted honey is an amber liquid fit to tempt the gods. What is most of all interesting to the general public, is that in consequence of modern improvements honey has been cheapened down until it is no longer a costly luxury seen only on the tables of the rich, but it is within the reach of all. As the result of this, it is safe to say

that there is ten times the honey consumed to-day that there was even a dozen years ago, and there is room for an indefinite expansion of the honey market.

Twenty-five years ago we had to say of wintering what Sir Robert Peel used to say about Ireland, "Ireland is my difficulty," and statesmen have to say that yet! Wintering was once our difficulty, but we have conquered it. We are not quite agreed whether cellar or out-door wintering is the better plan, but we can do it both ways. The transmission of queen bees by mail very long distances is a very important modern step in advance, as it furnishes the remote country bee-keeper;—every one who is within reach of a post office;—with ready means of making his apiary one of the best on the face of the earth.

I cannot even give a list of the recent improvements in the art of bee-keeping. Their name is legion. What I have mentioned may be taken as samples.

During the peroid I am reviewing we have had many discussions that were hot and fierce in their day, but they have died out. Mr. Heddon occasionally airs his pollen theory, Dr. Miller now and then alludes to his priority-of-location idea, Dr. Mason sometimes repeats his old bass-wood jokes, Prof. Cook dogmatically asserts once in a while that, "bees do not hibernate," while a Canadian by the name of Clarke is always ready to assert that they do, but great men are not always wise, and may be permitted to ride their hobbies on an open track where they will not run over other people. Like the tall, six-footer's little wife who sometimes thrashed him and concerning which the big husband was wont to say, "it pleases her but does me no hurt," so the individual bee-keeper can take pleasure in the satisfaction it gives men to ride their hobbies, so long as they pursue their pastime in a harmless manner.

I cannot close without referring to the vast strides bee literature has made on this continent since I began to wield the pen on this subject. In lieu of one periodical devoted to this pursuit we have several. Both Langstroth's and Quinby's books have been revised and brought down to date. Beside these there is a whole library of books, and to be equipped now a bee-keeper must not only have the works of the two great masters, but those of Cowan, Cook, Root, Miller. Hedson, Newman, Doolittle, Alley and others. In fact, of making many books on bee-keeping there is no end. In all human probability I must soon lay down the pen, the fingers are becoming tired, and the old brain-box that has been a busy, hurrying factory so long, craves a pillow, and will find one in death ere many years are past, but it is an unspeakable satisfaction to know that there are so many abler hands and bigger sets of brains that are employed in the same line of work in which I have sought to do what I could.

Just a final word as to the pursuit itself. It is only in its infancy and will yet see a far wider developement. I have never taught that it was a bonanza, but simply that it was as fairly remunerative as any other single line of agricultural economy. I believe its true place to be that of one among several departments of a mixed husbandry. It is liable to good and bad seasons, like any other branch of farming and two or three unfavorable years of late have sorely tried the staying power of many in the business, particularly the specialists. But the result is going to be the same as that of nature's evolution, the "survival of the fittest." Bee-keeping has a great future in store for it. I shall not live to see it; others will. I cannot doubt that among the joys of the other country whither we shall all emigrate before very long, will be that of beholding the progress of useful enterprises in which we have taken part while in this world, and the remembrance of having helped them in some small degree will be a memory not unworthy of heaven and not unknown there.

A vote of thanks was presented to the President for his very interesting address.

PRODUCTION OF COMB HONEY.

BY F. A. GEMMILL, OF STRATFORD.

In preparing an article on the production of comb honey I certainly feel my inability to do full justice to this interesting part of apiculture, I trust therefore you will overlook any apparent attempt on my part as posing as an authority on the same; especially as this essay is intended for the amateur rather than the expert.

I may as well state right here that much of my information has been received from the perusal of the various bee periodicals, the attendance at conventions and from conversation with friendly bee-keepers, all of which is of great benefit to those engaged in the production of honey in any shape whatever. I wish, too while on the subject of conventions to mention that I never yet attended one but that I was more than repaid in dollars and cents, aside from the pleasure afforded at meeting other bee-keepers.

While much depends on the style of hive used, still too much stress can be laid upon this point, as more actually depends on the character and duration of the honey flow, the mode and system carried on by the operator and his love for producing this particular kind of nature's sweets in the best marketable shape. All hives and supers should, however, be of the same outside dimensions, in order to permit thorough tiering, one above the other and all painted alike in color if possible. Again I am painfully aware that but a short distance in location makes a very great difference in management, so that one must be thoroughly posted as to his immediate vicinity regarding flora, etc.

I will now proceed with the result of my experience, combined with the information received as already stated, and it may surprise some to learn that the method actually commences with the successful wintering and springing of the bees themselves; as good strong colonies having prolific young queens are what is required for this purpose. Weak colonies are only a vexation and should be doubled up at the commencement of the honey flow proper, or assisted with hatching brood taken from colonies that have just swarmed, when little or no increase is desired this system will prove very satisfactory. The time for placing on supers is generally when the bees begin to whiten the tops of the brood with new wax; instead, however, of giving them a case of prepared sections, I prefer adding a half story of drawn comb above a queen excluding honey board and the giving of such a super is preferable for the following reasons:

1st. The bees are less inclined to swarm, as they enter it more readily, thus relieving the pressure on the brood chamber by the depositing therein of honey from below, or that newly gathered from the fields.

2nd. The centre sections are generally occupied first, especially if the honey comes in slowly, and consequently these sections are first filled and sealed, becoming travel-stained by the bees before any of the outer ones are ready for additional room, thus affecting the snow-white appearance which all comb honey should possess if possible.

3rd. I have not been able to dispense with the use of separators when giving a crate of sections before the super of drawn combs referred to as the centre sections are often bulged (for the reasons given in No. 2) to such an extent as to render crating them a great inconvenience. I have little or no trouble, however, in this line, provided the supers are well filled with bees throughout, and the honey is coming in rapidly.

4th. As soon as the half story is about two-thirds full of honey and capping has commenced, it is then raised up and a full case of sections containing either starters or full sheets of thin foundation is inserted between it and the brood chamber.

5th. With me the first honey deposited in the surplus department is not as nice in color or flavor as that gathered after the flow is thoroughly established, therefore as soon as bees are nicely at work in the sections below, it can be removed, the honey extracted as a second class article, and again replaced on another colony to be filled with a first-class article of extracted honey.

Swarming is generally expected about this time, and as I practice the cutting of the queens' wings, for reasons too numerous to mention at present, the swarm is treated as follows, viz: As soon as it commences to issue, the hive is approached and the queen secured in a small wire cloth cage, and while the swarm is still in the air the parent colony is removed and a new hive is substituted, containing five Langstroth frames, or their equivalent, filled with foundation, the balance of the hive being filled with dummies or division boards, or a still shallower brood chamber may be used, containing starters only, and the bees allowed to build their own combs. As soon as the swarm returns and about one-third of the bees have entered the hive, the queen is liberated and allowed to run in with them. The surplus arrangement is now removed from the old colony and replaced over the new one, having a queen-excluding honey board as before, when honey storing goes on apace as though no swarming had taken place. If little or no increase is desired the bees are all shaken from the combs of the parent colony in front of the new hive, and the brood placed above the queen-excluding honey-board, on other colonies that have not yet swarmed and fast as the brood hatches from them they are filled with honey for replacing in the brood chamber proper in the event of any being short of winter supplies.

If, however, increase is desired, the old colony may be left intact, in other words the bees are not to be shaken from its combs, but allowed to remain alongside the new ones, its entrance being turned away at an angle of forty-five degrees, and gradually moved close to the new one so that at the seventh or eighth day the two hives sit side by side. Now at mid-day when most of the bees are flying the old colony is removed to a new location in the apiary, thus depriving it of nearly all the field bees, which go to replenish the new swarm and at the same time depopulating the old one to such an extent that no further swarming may be expected. This latter plan is termed the Heddon method of preventing after swarms and has proved a success with me in every instance when properly carried out.

Additional section cases are given from time to time as required, care being taken of course that too much room is not given, and as a result a large quantity of unfilled sections when removed at the close of the whole honey harvest. After assorting out all those not sufficiently filled for market, the honey may be either extracted or the sections returned to the hives in order that the bees may remove the honey below, when they can be stored away for next season's use.

The brood chamber is again enlarged to its full capacity for securing the benefit of a fall flow should there be one, or for inserting well filled combs from the top stories of other colonies.

I have only to add, should anyone think there is too much labor involved in following out this system and knows of a better plan (there are other good ones) yet has not the time or inclination to attend to either, let me advise them to stick to raising extracted honey exclusively, as this can be done with less time

and attention and also the controlling of the swarming fever brought more under subjection. Apiculture, unfortunately, like many other pursuits is not altogether devoid of its hardships, and to him that would succeed, a determination to overcome all obstacles is imperative, failure is sure to follow sooner or later; and if any here present think of entering it, from a dollar and cents point of view only, with little or no love for the pleasure there is in it, they had better think a second time before investing much capital therein. Nothing is further from me than that I should, by any remark of mine discourage those contemplating a trial, as I entertain no motive whatever, much less one of selfishness, other than advising the amateur to go slowly, as experience can sometimes be purchased too dearly as many already know to their sorrow. Again, nothing succeeds like success, and there is no reason why you should not succeed as others have already done

Mr. Gemmill's paper brought out a healthy discussion on the subject of raising comb honey and the use of perforated metal.

ELECTION OF OFFICERS.

The election of officers for the current year was then proceeded with, W. Peck and R. Lowey being appointed scrutineers. The President and Vice-President were elected by acclamation as were many of the directors.

President.—Allen Pringle, Selby.
Vice-President.—F. A. Gemmill, Stratford.

Directors:

District No. 1	—W. J. Brown	Chard.
" " 2	—J. K. Darling	Almonte.
" " 3	—M. B. Holmes	Athens.
" " 4	—C. W. Post	Murray.
" " 5	—S. Corneil	Lindsay.
" " 6	—W. Couse	Streetsville.
" " 7	—A. Picket	Nassagaweya.
" " 8	—F. A. Rose	Balmoral.
" " 9	—R. McKnight	Owen Sound.
" " 10	—M. Emigh	Holbrook.
" " 11	—J. B. Aches	Poplar Hill.
" " 12	—Peter Bussey	Cottam.
" " 13	—F. H. Macpherson	Beeton.

Auditors:

D. Anguish	Brantford.
R. F. Holterman	Romney.

SECOND DAY—AFTERNOON SESSION.

President Pringle called the meeting to order at two o'clock and asked for the paper by F. H. Macpherson entitled:

A MODEL PREMIUM LIST.

As no subject was suggested for me, I have taken the liberty of choosing one which is somewhat out of the ordinary line, but yet one which will open up a discussion that will, I trust, be beneficial and instructive.

Before entering upon the subject I think the first question which must be decided is: "In whose shoes should the author of such a paper as this stand?" Should he represent the fair management who offer the premiums; or should he look at the matter from the standpoint of the competitor for the prizes. I believe I voice the general opinion when I say, the former. Assuming that I am correct in my conclusion, let me ask what is the ultimate object which prompts the holding of exhibitions. My idea of the prime intention of all exhibitions is that they shall be *educational* mediums. Their object is to bring into honorable competition the various products and manufactures of the country, so that the general public may have the opportunity of comparing exhibits, and gleaning information and instruction from their examination. It is therefore obvious that all premiums offered should be on such products or manufactures as will *interest* the public whom they desire to reach, and it is only by interesting the public that they *can* be drawn out. It is therefore the plain duty of fair directorates to offer prizes on such articles as will bring forward exhibitors, who will show productions that will bring out the people, as by this the end and object of the directorate is attained. Let me say, then, that I have endeavored in the preparation of the following list, which is of course designed to apply to the apiarian department of the prize list, to place myself in the position occupied by the committee whose duty it is to prepare premium lists that will "draw" both exhibitors and public.

I have attended regularly the various exhibitions throughout Canada, and a few of the best in the United States, and I have had considerable opportunity of noticing the deficiencies in the premium lists as they are at present constituted. Without further ado I shall present a list which is, I consider, as nearly right in all the important features as it can well be, taking into account the varied interests represented: those of the fair management, the exhibitor, and the general public. After presenting the list, I will state shortly, my reasons for any marked changes I have made. I have taken the lists of a number of fairs and culled from them all such a schedule as I will recommend, adding a class or two not now including in any of them:

1. Specimen of extracted honey, not less than 10 lb., quality and manner of putting up for market in practical shape, to be considered.....		$10	$6	$4
2. Specimens of comb honey in sections, not less than 20 lb., quality of honey, cleanliness of sections, freeness from pop-holes and manner of putting up for market in practical shape to be considered.....		10	6	4
3. Most attractive display of extracted honey, not less than 500 lb. of which one-half must be in glass, quality of honey and practical shape in which put up for market considered.....	20	15	10	5
4. Most attractive display of comb honey, not less than 500 lbs., quality of honey and freeness from pop-holes; also practical shape in which put up for market, to be considered. ..	20	15	10	5
5. Display of granulated extracted honey in glass, not less than 100 lb., quality of honey to be considered		10	5	3

6. Beeswax, not less than 10 lbs., soft, bright yellow wax to be given the preference over bleached wax	$6	$4	
7. Samples of comb foundation for brood chamber, quality of make and pliableness of wax to be considered before color.	4	2	
8. Sample of comb foundation for sections	4	2	
9. Comb foundation for use in sections, to be made on the grounds from sheets previously prepared	10	5	
10. Honey vinegar, not less than one gallon, to be shown in clear glass	4	2	
11. Largest variety of uses to which honey may be put, illustrated by individual samples of the different things into which it enters as a component, example: say one or two samples each in canned fruits, cakes, pastry, meats, etc	10	6	4
12. Section super and system of manipulating, product to be exhibited in super as left by the bees	4	2	
13. New and most practical invention for the apiarist never shown before at this exhibition	5	3	
14. Best general purpose hive, cost at which furnished to be a prime consideration	4	2	
15. Display of honey-producing plants, properly named and mounted	6	3	
16. Exhibit of apiarian supplies, quality of workmanship and utility to be taken into consideration	20	10	
17. Most interesting and instructive exhibit of any kind connected with bee-keeping	10	5	4
A total list of			$300.

In many of the classes I have merely changed the wording to suit my views, from what has been the general custom. Class 2 is a new departure and is one which I think will meet with general favor. It will be a grand educator. Next comes the question of hives and supplies and in this connection I have kept in view the principles laid down in the opening paragraphs of my paper, and as a consequence I have decided that hives and other appliances of the apiary have a place in these lists that cannot be overlooked. Such an exhibit will "draw" the public (and especially those of it who desire to learn) in a way that an exhibit of honey alone will never do. More bee-keepers will attend an exhibition where there is a good show of supplies than where honey only is shown, by long odds: this I have seen practically illustrated. Again, all manufacturers of supplies cannot afford to make an exhibit worthy the name, without some chance of a small recompense to assist in covering the cost of freight charges at least. The question may be asked, "Why do you not place manufacturers of supplies on the same footing as are manufacturers in other lines?" I answer that in the latter case the manufacturers have the whole public as prospective customers, either directly or indirectly, while in the case of the supply dealer but a very small proportion comparatively will likely ever become customers. Were hives, extractors, etc., staple articles of merchandise or manufacturers, having the general public as purchasers, then I should by all means leave them in the same class as other manufacturers. Again the sale of supplies is seasonable and the exhibitions are all held at a time diametrically opposed to the best interests of the dealer in supplies, when no sales, or at least very few, can be made, and these must be at a discount off the regular prices.

On the other hand no more auspicious moment can be found for the disposal of the honey crop, and to my mind the giving of large prizes in this direction to the exclusion of prizes on hives, etc., is like offering a premium to honey-producers for the privilege of extending to them a first-class market for their crops. It must be remembered that I am not opposed to premiums on honey, as a perusal of the above list will show; my only desire is to present a list which will be equally beneficial to all, not forgetting the exhibition officials, the general public or the exhibitors.

After the paper was read it was suggested that the premium list be taken up clause by clause, so that the changes proposed might be intelligently discussed. Considerable difference of opinion existed respecting several of the classes.

RESOLUTIONS.

Moved by R. McKnight, seconded by M. Emigh and resolved: That the President and Vice-President be a Committee to prepare a bill for the suppression of foul brood, and to bring the matter before the Minister of Agriculture, with power to add to their number.

Moved by F. H. Macpherson, seconded by R. McKnight and resolved: That this association require from the Secretaries of all affiliated societies a detailed statement each year, showing the balance in hand (if any) from last grant, the amount of the present grant and the manner in which the foregoing amounts have been expended, with balance (if any) still on hand.

Moved by R. McKnight, seconded by A. Picket and resolved: That the President, Mr. Pringle, be the representative of the O. B. K. A. at the annual meeting of the Central Farmers' Institute.

Moved by Mr. R. McKnight, seconded by W. Couse, that whereas it is desirable that this association be represented at the next meeting of the International A. B. A., resolved: That not more than two such representatives be elected by this association in annual meeting, but that additional delegates may be appointed by the President in the terms of the International constitution, on the understanding that the association shall not be responsible for any part of the expenses of such additional delegates; further resolved, that Rev. W. F. Clarke be the delegate elected by the Association, and that the expense to the Association is not to exceed $40.

Votes of thanks were passed to the city council for the use of the city hall, and to the Board of Trade and the citizens of Belleville for the generous treatment received at their hands.

In this connection it may be mentioned that the city council and Board of Trade, tendered the Dairymen's Association and the Bee-Keepers Association a banquet in consequence of their presence in the city. The banquet was a magnificient affair and was a grand success, over one hundred sitting down to tables overloaded with good things. The chair was taken by Ald. J. W. Johnson, in the absence of the mayor, who was suffering from illness. The usual toasts were presented and responded to in good style. Amongst those present were Governor Hoard of Wisconsin, Hon. Senator Read, R. Burdett, M.P., Prof. Robertson, Guelph, and Mayor Derbyshire, Brockville.

DIRECTORS' MEETING.

At the Directors' meeting which followed the last session of the annual meeting there were present:

A. Pringle, President, F. A. Gemmell, Vice-President. Directors, W. J. Bunn, J. K. Darling, C. W. Post, W. Couse, A. Picket, R. McKnight, M. Emigh and F. H. Macpherson.

W. Couse was re-elected Secretary and R. McKnight Treasurer.

Executive Committee.—President, Secretary and Treasurer.

Delegates to Industrial Board.—R. McKnight and M. Emigh.

Printing Committee.—President and Secretary.

The appropriation for affiliated societies was placed at $300.00, no society to receive more than $30.00.

It was decided to give as a premium to all members of the Association for the current year, a No. 2 (large) smoker, value $1.25, as a *quid pro quo* for their membership fee.

The next place of meeting will be in the city of St. Catharines, on the second Wednesday and Thursday of January, 1891.

The meeting then adjourned.

THE POULTRY ASSOCIATION OF ONTARIO.

To Hon. Charles Drury, Minister of Agriculture :

Sir,—The fifteenth Annual Exhibition of the Poultry Association of Ontario was held in the Central Skating Rink, in the City of St. Catharines, January 8th to 11th, 1889. All classes were well represented with the exception of Leghorns, notwithstanding the dates clashing with Detroit, and Buffalo's International coming the following week, which had the effect of lowering our number of entries somewhat.

St. Catharines being near the border, resulted in enticing a number of visitors from the United States to see the exhibit and purchase stock, thus shewing their appreciation of the quality of Canadian poultry.

The following gentlemen were selected by the directors to perform the difficult task of judging poultry : Messrs. L. G. Jarvis, Port Stanley ; S. Butterfield, Amherstburg, and T. H. Smelt, Guelph. Pigeons and Pet Stock—Mr. Ham Cooper, Hamilton. I might here state that they gave general satisfaction, performing their respective duties well and in ample time.

The judging was by the American standard, assuming one hundred points as a perfect bird. The directors having profited by the experience of former officers, employed another judge, and thus overcoming the difficulty of not having all of the birds scored before the close of show. This resulted in getting the score cards up in ample time, and gave the visitors an opportunity of studying the anatomy of the bird. It likewise gave the exhibitors a chance to sell their exhibits, and also the buyer an opportunity to see the defects, in order to make a selection as to improvement of their stock.

Our premium list was got up in a better appearance than on former occasions, and the soliciting of advertisements from merchants in the city resulted in making it pay for the printing, and leaving a balance to the credit of Association.

As to quantity and quality of exhibits at our late exhibition, it was said by the oldest exhibitors, comprising those that have been exhibiting ever since the Ontario has been in existence, that it was the largest and finest as to quality of birds ever held in Canada.

All classes were divided into their respective varieties and exhibited as single birds, starting with Asiatics including Light and Dark Brahmas, Buff, White, Black and Partridge Cochins and Langshans. This class was well filled, containing the largest number of entries of any class in the show, and it was stated by the judge to contain the finest collection as to quality that he ever judged. Light Brahmas were well represented. Darks were not quite so large in number, but the quality was equally as good. Brahmas are one of the largest varieties of poultry we have at our exhibitions, weighing fourteen pounds a piece. They lay a medium sized egg, with dark shell and yoke, which are said to be the best flavored eggs of any breed in existence. Brahma hens mated with a Leghorn cock produce for the farmer a capital general purpose fowl, being hardy, of good size and maturing early. They also lay a large number of eggs, and are not as liable to set as the pure Brahma.

In Cochins, all colors were fairly filled. This variety is not so extensively bred as the Brahma, on account of setting propensities of the hen, but crossed with a non-setting variety they make a fairly good general purpose fowl.

Langshans were well represented. In appearance and color they are about the same as Black Cochins, but are better layers and instead of having a yellow skin like their cousins it is white. This variety since their importation from China a few years ago, have made rapid strides in popularity. They can now be found in four out of every

five breeders' yards in Canada, they mature early and lay the largest number of eggs of the Asiatic class.

Of Dorkings there were varieties—Silver-grey, Colored and White. They were medium in number, but the quality was extra. This variety owes its existence to England, where they are found in their glory. They are noted for their square build and flesh producing qualities, giving an abundance of meat on the breast. They are medium layers, with a white skin and shanks of the same color, which is a detriment, as the people at large prefer yellow skin and shanks, although the former color is preferred in England.

Game fowl were well represented including all colors, with Standard bred and Pits competing in separated classes. Games as a general rule are not a favorable breed for the farmer on account of their quarrelsome disposition, otherwise they are considered excellent mothers, fairly good layers and good table fowl, the meat being very juicy.

Plymouth Rocks were large in number and quality good, including Barred and White. This variety is purely American in its origin. They are counted to be the best general purpose fowl in existence, and farmers were not slow in learning their good qualities, as they are now to be found on nearly all farms throughout Canada. They mature early, are good layers, and are also good table fowl, with yellow skin and shanks, which makes them the best variety as to meat for the Canada market.

Wyandottes were shown in large number, and were of excellent quality, including Black, White, Silver and Golden. This variety, likewise, owes its origin to America, they being the latest variety added to the poultry class. As a general purpose fowl they rank next to the Plymouth Rock. They lay about the same number of eggs, but not of so large a size. The color of the Silver and Golden is very pleasing, especially the Golden, which makes them much admired.

The competition in Spanish was not very strong. They are good layers of large white eggs, but being somewhat tender cannot stand the winter season, and consequently are not extensively bred in Canada, although in England, where they are bred more to perfection, they are to be found very often in the breeders' yards.

Minorcas were out in large numbers and were of good quality. This variety resembles the Spanish, with the exception of not having the white face. Being hardier they are more adapted to the people at large. They lay the largest egg of any variety in existence. They owe their origin to an Island of the same name in the Mediterranean. There are two colors, Black and White.

Leghorns were not in very large numbers and the quality was medium. All colors were represented. This variety was imported from a place in Italy by that name about 1835, and since then they have become very popular. They are now to be found in nine-tenths of the breeding yards of America. They are bred in five or six colors, but brown and white predominate. They mature earlier than any other breed in existence, pullets laying at four months and cockerels crowing at six weeks. They bear confinement well and lay the largest number of eggs of any variety bred. They are non-setters, and, by crossing with any of the Asiatic class make excellent farmers' fowl.

The Andalusians were confined to two or three breeders. They are a fowl blue in color and allied to the Spanish class. They are good layers, and being non-setters, are valued for their laying qualities.

Houdans were well represented both in quality and number. This variety belongs to France ; they are good layers as well as being a good table fowl, which makes them a favorite variety to breed.

"Any other French variety" included Creve-Coeurs and La Fleche. They were represented by two or three breeders. They have the same qualities to recommend them as the Houdans, but they are not so extensively bred in Canada as the former.

Polands are considered to be the oldest variety of our domestic poultry. They were represented by seven varieties, including white crested, black, golden, silver, white, golden unbearded and silver unbearded. This variety is somewhat tender owing to their large

crests being exposed to the wet, which results in a disease known as roup. They are non-setters, capital layers, and mature fairly early, making a good cross with any of the Asiatic family for the farmer. This class was well represented in number and quality. They had the credit of being the nearest to perfection of any variety at our late exhibition. With this breed Canada excels the United States. Several cases are known of Americans purchasing our stock for the improvement of their breeding yards. This variety is to be found in large numbers and of excellent quality in and about London.

Hamburgs were shown in large numbers of good quality, consisting of golden, spangled, silver spangled and black. Nothing definite is known of the origin of this variety, but have been bred in England for a number of years from which frequent importations are made for improvement of home stock. This breed, in size, ranks the lowest of our domestic poultry, being next to Bantams. They are excellent layers and non-setters, but, being of a wild disposition, are very difficult to confine to limited quarters.

"Any other Standard variety" included all the varieties not having a class by themselves. They where fairly represented and of good quality. With the exception of one or two varieties they are not bred extensively, being a hobby of a few breeders, and as there is not much competition the Association deems it best not to give them a separate class.

Bantams were out in full force, including Black-red, Brown-red, Duckwing and Pyle Game; also Golden and Silver Sebright, White and Black African, Polish, Japanese and Pekins, which represent the Buff Cochin in a miniature form. The Bantams are bred in large quantities through Canada for pleasure. They are excelleut layers, however, surpassing the large Cochins as to weight of eggs in the course of a season. The excitement runs high for this variety, and fabulous prices are known to have been given for these diminutive pets. Our best specimens are secured in England, where they are bred to their highest state of perfection, and $100 to $200 a pair have been frequently given for this variety by some of the largest breeders in the United States.

In the Turkey class the exhibit list was well filled, and all were of excellent quality, weighing over forty pounds a piece. Turkeys, on account of their roving disposition, which demands a large run, are bred chiefly by farmers. Large shipments are made annually in the fall to the United States, from which considerable revenue is derived.

In Geese all classes were well filled and of good quality. Our best breed of geese originated in France. The Tolouse, grey in color, weighing when dressed twenty pounds, and the Bremen, in color white, make excellent varieties to cross with the common goose, increasing weight and quantity of feathers.

All classes of Ducks were well represented, including Aylesbury, Pekin and Rouen. The Aylesbury are white, of large size, with flesh-colored beak. The Pekins are the largest layers of any of the duck family, growing to an enormous size, and they mature very early, which makes them an excellent variety to breed for the market. They produce a large quantity of feathers, which can be plucked from three to four times in a season giving considerable of a revenue. The Rouens are nearly as large as the former, and are somewhat of a plumper build, but they are not quite as good layers.

All varieties of pigeons were represented, being good in quality and making the largest exhibit ever held in Canada. Pet stock were to be seen in great variety, and included attractions to make up a first-class exhibition.

The annual meeting was held on the third day of the Exhibition, when St. Catharines was selected by a large majority as the place to hold the next Exhibition. The following directors and officers were elected :—

Officers.—President, J. C. Rykert, M.P., St. Catharines; First Vice-President, Allen Bougue, London; Second Vice-President, Wm. Barber, Toronto; Secretary, R. Hamill, St. Catharines; Treasurer, W. H. Crowie, St. Catharines.

Directors.—T. H. Smelt, Guelph; Wm. McNeil, London; W. R. Knight, Bowmanville; S. Butterfield, Windsor; J. E. Lawrence, St. Catharines; A. Pay, St. Catharines; W. H. Crowie, St. Catharines; John Cole, Hamilton; H. E. Russ, Grimbsy.

AUDITORS.—Charles Bonnick and W. H. Donovan, Toronto.

Delegates to Industrial Exhibition—C. J. Daniels and Chas. Bonnick, Toronto.

Delegates to Western Fair—G. G. McCormick and J. Saunders, London.

Delegates to Central Fair—John Cole and P. H. Hamilton, Hamilton.

The next meeting will be held in Toronto during the Industrial Exhibition, for the revision of the premium list and the appointing of judges for the next exhibition.

The total amount offered for competition was $1,506.50; cash, $1,274.50; sundries in the shape of eggs, stock, merchandise, etc., as specials, $232.

R. HAMILL,
Secretary.

Financial Statement of the Ontario Poultry Association for 1889:

Receipts.	$ c.	Disbursements.	$ c.
Note discounted in lieu of Government grant	587 90	Premiums	827 05
Entrance fees	443 03	Judges' fees	105 00
Membership fees	99 00	Labor expenses	42 85
Advertisements in prize list	89 00	Advertising	16 50
Special cash prizes	50 50	Printing	129 69
Protest	2 00	Feed	11 87
Commissions	50	Rent of building	45 00
Sale of score cards	1 50	Postage	16 92
Door receipts	40 60	Stationery	3 65
		Salaries	76 03
		Sundry small expenses	12 08
		Claims	21 65
		Cash on hand	5 74
	$1,314 03		$1,314 03

We the undersigned Auditors of the Ontario Poultry Association of Ontario for the year 1889, have examined the books and checked the accounts and vouchers of said Association, and find the same correct.

Signed. { GEO. G. McCORMICK,
J. H. SAUNDERS.

March 10th, 1890.

The following are the Constitution and By-laws of the Poultry Association of Ontario, adopted at the annual meeting held in St. Catharines:—

CONSTITUTION.

1. The object of this Association is to encourage the interest and to promote improvement in the breeding and the management of poultry and pet stock, by means of exhibitions, the collecting and disseminating of reliable and practicable information relating thereto.

2. The officers of this Association shall consist of a President, two Vice-Presidents, and nine Directors, the same to be elected at the annual meeting, seven of whom shall form a quorum for the transaction of business.

3. Any person on the payment of $1 becomes a member of this Association for the term of one year, said fee to be paid to the Secretary on or before the day of annual meeting.

4. None but duly qualified members of this Association are allowed to vote. All questions shall be decided by vote, either by ballot or otherwise, as decided by meeting.

5. The annual meeting of the Association shall be held at 7.30 p.m., on Thursday of the same week, in the same city or town in which the annual exhibition is held.

6. Special meetings of this Association shall be called by the President, and notice shall be sent to each Director through the post-office specifying the object of such meeting, at least eight days before the day appointed for holding the same.

7. Two Auditors shall be elected at the annual meeting of this Association each year.

BY-LAWS.

Sec. I.—Duties of President.

1. The President shall preside at all meetings of the Association and board meetings, and shall decide all questions of order subject to the right of appeal.

2. He shall enforce order and decorum at all meetings, and see that all by-laws and resolutions of the Association are properly carried out.

3. He shall be an ex-officio member of all committees with power to vote.

Sec. II.—Duties of Vice-Presidents.

1. The 1st Vice-President shall, in the absence of the President, have the powers and assume the duties of the President.

2. The 2nd Vice-President shall, in the absence of the President and 1st Vice-President, have the powers and assume the duties of President.

3. In the absence of the President and the 1st and 2nd Vice-Presidents, the members may appoint one of their number to preside.

Sec. III.—Duties of Secretary.

1. It shall be the duty of the Secretary to keep a record of the proceedings of the annual and all board meetings, to have charge of all books and documents belonging to the Association, and to carefully preserve the same.

2. He shall conduct all correspondence of the Association subject to the order of the President.

3. He shall receive all membership and entry fees, handing same to Treasurer as soon as practicable.

4. He shall forward to the Auditors all books and papers of this Association under his care on or before August 1st of each year.

5. He shall make out two reports to be sent to the Minister of Agriculture as prescribed in sections 9 and 10 of the Act of Incorporation of the Poultry Association of Ontario.

Sec. IV.—Duties of the Treasurer.

1. The Treasurer shall receive all funds belonging to the Association, all payments being made direct to him except membership and entrance fees which may be received by Secretary, but which are to be handed to Treasurer as soon as practicable.

2. He shall pay all bills, accounts, awards, etc., contracted by the Association, per order of the President and countersigned by the Secretary.

3. He shall present a complete statement of his accounts at each annual meeting or oftener if required, and shall perform such other duties as may be required by the board.

4. He shall forward to the Auditors all books and papers of this Association under his care on or before August 1st of each year.

5. For the proper performance of his duties, bonds to the extent of $1,000 shall be procured from a company of bondsmen satisfactory to the board.

Sec. V.—Order of Business.

1. Meeting called to order.
2. Reading minutes of last annual meeting and board meetings.
3. Secretary's report.
4. Treasurer's report.
5. Auditors' report.
6. Reports of Special Committees.
7. Deciding on place for next Exhibition.
8. The election of Officers.
9. The election of Auditors.
10. Miscellaneous business.

No By-law of this Association shall be repealed, amended, or added to, except on a vote of two-thirds of the members present at the annual meeting.

EASTERN ONTARIO POULTRY AND PET STOCK ASSOCIATION.

To the Hon. Charles Drury, Minister of Agriculture :

SIR,—The fifth annual exhibition of the "Eastern Ontario Poultry and Pet Stock Association" was held in the By Ward Market Hall, in the City of Ottawa, from the 14th to 17th February, 1889.

The prizes offered were the same as the previous year, viz: 60 per cent. of the entry fees for first prize: 30 per cent. for second, and the remaining 10 per cent. was retained by the association, to these were added one hundred and fifty dollars in cash, and a large amount by private individuals as special prizes.

The number of entries were slightly in excess of last year and the birds on the whole were of a superior quality.

Mr. J. Y. Bicknell, of Buffalo, N. Y., officiated as judge for the third time, scoring all birds not disqualified, and giving general satisfaction to exhibitors. Mr. Bicknell expressed himself well pleased with the quality of the exhibits, which he said were much superior to either of the two former exhibitions he had judged in Ottawa.

The exhibits of Leghorns, Games, Minorcas, Wyandottes and Plymouth Rocks were especially good, and the Red Caps, Scotch Greys and Black Sumatras made their first appearance at an Ottawa show.

In 1885, when our first exhibition was held, very few of the local exhibitors were fortunate enough to win, almost all the prizes being taken by outside exhibitors, since then there has been such an improvement in the quality of the local stock, that Ottawa exhibitors not only take their share of the prizes at their own show, but their names will be found in the prize lists of both eastern and western exhibitions.

The association held regular monthly meetings during the year, besides a number of special meetings, which were all well attended, thus showing the great interest taken in poultry culture in this vicinity.

At several of these meetings interesting papers were read by members, and a new feature was introduced, that of scoring birds. One or two varieties were brought each evening, which were scored by some one present, who was afterwards called upon to explain his reasons for such score. In this way our meetings were made both entertaining and profitable.

The officers of the association for the year were :

President, O. A. Rocque, Orleans, Ont.

Vice-President, G. S. Oldreive, Kingston, Ont.

Vice-President, H. S. Perley, Ottawa, Ont.

Treasurer, Alex. Stewart, Hintonburg, Ont.

Secretary, Alfred Geddes, Ottawa, Ont.

COMMITTEE.

John J. Gill, W. S. Odell, E. H. Benjamin, E. Edwards, Thos. Murphy, Ottawa G. C. Howison, Brockville, and C. J. Devlin, Mount Sherwood.

ALFRED GEDDES
Secretary

OTTAWA.

FINANCIAL STATEMENT.

The Treasurer, in account with the Eastern Ontario Poultry and Pet Stock Association, from 1st Dec., 1888 to 31st Dec., 1889.

Receipts.	$ c.	Expenditure.	$ c.
Balance on hand, 1st Dec., 1888	50 43	Paid gratuity to former Secretary	42 00
Entry fees	136 25	" postage and stationery	11 85
Members' fees	55 00	" printing and advertising, prize lists, score cards, etc	57 05
Door receipts	88 82	" heating and light, including electric light	48 93
Miscellaneous receipts	18 15	" judge	69 00
Government grant	300 00	" lumber, cartage, etc	11 15
		" caretaker and carpenter	21 50
		" grain	9 87
		" sundry accounts	5 40
		" Secretary's salary	40 00
		" prizes	303 92
		Cash on hand, 31st Dec., 1889	27 98
	648 65		648 65

We, the undersigned, have examined the above statement of account and find the same correct.

E. H. BENJAMIN,
JOHN B. HOLT, } Auditors.

RETURN.

To a Resolution passed by the Legislative Assembly, on the 21st day of March, 1890: That an humble address be presented to His Honour the Lieutenant-Governor, praying that he will cause to be laid before this House, a copy of a petition presented to His Honour the Lieutenant-Governor, from the Municipal Corporation of the Village of Cayuga, relating to the Grand River Navigation Company. Also, for a copy of all Correspondence relating thereto.

By Command,

J. M. GIBSON,
Secretary.

Provincial Secretary's Office,
Toronto, 28th March, 1890.

(*Mr. Harcourt.*)

SCHEDULE.

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DEPARTMENT OF PUBLIC WORKS, ONTARIO.
TORONTO, February 24th, 1873.

The undersigned has the honour to submit for the consideration of His Excellency the Lieutenant-Governor in Council, the annexed petition of the "Haldimand Navigation Company," shewing that the works of the Haldimand Navigation Company (Limited), are composed of the larger portion of those formerly owned by the "Grand River Navigation Company," incorporated in the year 1832; that these works extend from Cayuga to Brantford, a distance of about 32 miles on the largest river in Ontario west of the Ottawa, possessing water powers and privileges second to none in the Province; and praying Your Excellency to cause a sum of money to be placed in the Estimates sufficient to enable the company to put the works in good repair, and inasmuch as the work is in the hands of a private company, would recommend that the prayer of the petition be not granted.

All of which is most respectfully submitted.

(Signed) ARCHIBALD McKELLAR,
Commissioner.

To His Excellency
The LIEUTENANT-GOVERNOR IN COUNCIL,
Ontario.

YORK CO., HALDIMAND, September 2nd, 1873.

Hon. A. McKELLAR.

SIR,—I have the honour to enclose a copy of resolution passed at a meeting of the Directors of the Haldimand Navigation Company (Limited), held the 29th of last month.

I am Sir,
Your obedient servant,

ADAM A. DAVIS,
Secretary H. N. C. L.

(Copy.)

Moved by Alex. Taylor and seconded by Colin Baker, and resolved, That the Secretary be instructed to write to the Hon. A. McKellar, reminding him of his promise, made to the deputation (introduced by Dr. Baxter, M.P.P., from the Haidimand Navigation Company Limited, in February last), to send the Government Engineer to inspect the works on the Grand River, suggesting that the season for such inspection is fast passing away, and respectfully urging his attention to the same.—Carried.

D. THOMPSON,
President.

A. A. DAVIS,
Secretary

(*Copy.*)

DEPARTMENT OF PUBLIC WORKS, ONTARIO,
TORONTO, 15th October, 1873.

DEAR SIR,—In reply to your letter of 9th instant, respecting improvement of the navigation of the Grand River, an inspection shall be made as early as possible, but I am of opinion that the Government cannot assume the responsibility of any works in connection therewith, inasmuch as the matter in question concerns private individuals, and cannot be taken in hand as a Government work, besides the waters in the east reach the termini of several railways running far into the interior of the country, enabling lumbermen to bring their logs and square timber to market, and from which the Government derives a large revenue. Any improvements which might be made to the Grand River would be no direct advantage to the Government, however, an inspection shall be made and a report prepared.

I have the honour to be,
Sir,
Your most obedient servant,

(Signed) ARCHIBALD McKELLAR,
Commissioner of Public Works.

J. BAXTER, ESQ., M. P. P.,
Cayuga, Ontario.

INDIANA, Ont., October 15th, 1873.

Hon. A. McKELLAR,
Commissioner of Public Works,
Toronto, Ontario.

DEAR SIR,—It is now getting very late in the fall, and no visible signs of your engineer whom you have so often promised to send to inspect our works. It seems very strange. I thought when ourfriends were in power we could depend upon them to at least carry out their promises, we want to know whether you intend sending him, or are only promising in order to put us off. If the latter, say so. When we see other deputations visiting you on similar matters receiving every encouragement, we feel annoyed. Do send him on if you intend to, and make upon his report us a grant of $50,000 or $60,000. Awaiting your reply which I hope will be more encouraging than your promises were,

I am, dear sir,
Yours truly,

D. THOMPSON.

I need hardly add I refer to the Haldimand Navigation (Limited) Company's works.

DEPARTMENT OF PUBLIC WORKS, ONTARIO,
TORONTO, 10th February, 1874.

Hon. A. McKELLAR,
Commissioner of Public Works.

SIR,—In accordance with your instructions, Mr. Halwell, C.E., of this Department, has made ad examination of the Grand River Navigation works, extending from Cayuga to Brantford, and I herewith submit the result of his observations.

The Village of Cayuga which is at the head of the deep water navigation caused by the Government dam at Dunnville, can be reached by schooners from Lake Erie. But from thence to Brantford the Grand River is obstructed by a series of shoals and rapids, and these in forming the navigation have been overcome by the construction of a series of dams and locks extending from Indiana to Brantford, which were intended, I believe, to give a navigation throughout, with a depth of four feet of water on the mitre sills of the locks, but from defects in construction or perhaps from the gradual reduction in the water supply, there are some parts of the navigation where this depth is not attained during the seasons of lowest water.

The entire length of the navigation from Brantford to Cayuga is about 37 miles, out of which 20 miles have a depth of water exceeding 7 ft. 9 in.

There are eight locks in all, five of these are between Indiana and Caledonia, and three are at or near Brantford. These locks were originally built of rubble stone masonry of a poor quality, the faces of the walls in the chambers being sheeted with planking to protect the stonework.

All the locks are now more or less in bad condition, and the following repairs are required at each:

Indiana Lock:

One set of new gates, two new hollow quoin timber, 4,000 feet B. M. sheeting, 400 feet crib timber, eight cubic yards stonework. Estimated cost of these repairs, $800.

York Lock:

Two sets new gates, four new hollow quoin timbers, 400 feet crib timber, 1,000 feet B. M. sheeting, two cubic yards stonework. Dredging for about 900 feet in length below lock to a depth of two feet. Estimated cost of repairs, $3,000.

Millfield Lock:

This lock requires reconstruction throughout. Estimated cost, $20,000.

Seneca Lock:

This lock also requires entire reconstruction. Estimated cost, $20,000.

Caledonia Lock:

Two sets of new gates, four new hollow quoin posts, two balance beams 2,000 feet B. M. sheeting. Estimated cost of repairs, $1,200.

Brantford Lower Lock:

Four new hollow quoin posts, four new balance beams, 4,500 feet of B. M. sheeting, 450 feet crib timber. Estimated cost of repairs, $700.

Brantford Middle Lock:

Two new hollow quoin posts, half wing at upper gates. One balance beam, 10,000 feet B. M. sheeting, 400 feet of crib timber. Cost of repairs, $700.

Brantford Upper Lock:

Same repairs as in Middle Lock. Cost of repairs, $700.

Dams:

The dams in connection with these works require the following repairs:—

Mount Healy Dam:

850 feet of timber to rebuild pier, etc. Estimated cost, $500.

Spooner's Dam:

This work was being repaired at the time of examination.

Taylor's Dam:

Some of this work has been shoved out of place, and requires reconstruction, Assumed cost, $600.

York Dam:

120 feet of dam to be raised 1 foot, requiring 153 c. yards filling, 920 feet of timber, 1,200 feet B. M. 3 inch planking. Estimated cost, $560.

Millfield Dam:

195 c. yards filling, 500 feet timber, 8,640 feet B. M. 3 inch planking. Estimated cost, $650.

Seneca Dam:

250 c. yards filling 3,000 feet timber, 6,300 feet planking, also 180 feet in length of embankment 12 feet high. Estimated cost, $2,200.

Caledonia Dam:

Requires repairs in timber and planking which will cost under $200.

I have not sufficient details before me to say what the cost of the repairs may be which are required at the Brantford Dams.

The summary of the repairs to locks and dams will be as follows:—

Cost of repairs and re-construction of locks	$47,100 00
" " to dams	4,710 00
Total, exclusive of the Brantford dams	$51,810 00

These repairs would simply put things in order in connection with the locks and dams with the same depths on the mitre sills as they have at present, but in order to give a 4 feet navigation throughout from Cayuga to Brantford. Some of the locks mentioned as requiring only repairs would have to be rebuilt, and dredging would have to be done at various places along the route, the cost of which I cannot at present estimate.

At the time of the construction of the Brantford navigation works they were properly looked upon as forming a very important means of access from Lake Erie to Brantford, and the district through which they were being constructed, but the extension and development of railways throughout the country since that time has made material changes in the modes by which the traffic of the country is now carried, and Cayuga, Indiana, York, Caledonia, Middleport and Brantford are all connected with or near to leading railways now in operation.

I have the honor to remain,
Your obedient servant,

T. N. MOLESWORTH.

York, February 21st, 1874.

At a meeting of the Directors of the Haldimand N. Co., L., held this day the following resolution was unanimously adopted.

(*Copy.*)

Moved by Mr. Martindale, and seconded by Mr. Baker, and resolved, That this Company enter their protest against the treatment they have received at the hands of the Ontario Government, (as compared with other counties) that the same be signed by the President and Secretary on behalf of the Company, and forwarded to Dr. Baxter, M.P.P., to be presented by him to Hon. A. McKellar, Commissioner of Public Works.—*Carried.*

(Signed) A. A. DAVIS,
Secretary H. N. Co. L.

February, 1874.

Hon. A. McKellar,
Commissioner of Public Work.

Sir,—The undersigned beg most respectfully to protest against the treatment they have received at the hands of the Ontario Government in respect to a grant or loan to be expended on the Grand River. Many here have invested their *all* in mills, factories, etc., etc., on these works, and now with ruinous prospects staring them in the face, and means all expended, they have applied to a Government to which they have always given an unswerving support, for assistance, which has been denied, while it has been extended to other counties in the Province, for similar works, and to many railroads running through counties not so noted for their attachment to Reform Government as Haldimand has alway sbeen.

As was stated to you personally, assistance is not asked on any other ground than that of necessity and justice to our county. The income from rents alone at present is over $2,000. So that 5 per cent. on $30,000 is at once guaranteed from rents payable half-yearly. And the Haldimand N. Co., L. is ready to hand over the entire control to whoever may be appointed to receive the same. This expenditure we are satisfied would pay as well as bank interest, and be far more beneficial to the country.

The aggregate value of buildings, machinery etc., on the dams here now is over $100,000 which may next spring be left valueless by the freshet, and not the slightest prospect of any repairs except assistance can be had in the way of grant or loan. We may be wrong and hope we are, yet under the circumstances we cannot help thinking that if the support of the County of Haldimand was as doubtful as other counties, that we would be differently treated.

With regard to the report and estimate of T. N. Molesworth Esq., we know from actual observation that it is entirely wrong, and does not tally with the report made by that gentleman for the town of Brantford in the year 1867. In estimate No. 2 of 1867 he reports the cost of giving *four* feet depth of water *including excavations, repairs of locks* and reconstruction of *lock* at *Brantford* at $44,664.73, while in this case without any excavation, without reconstruction of lock at Brantford, it is $51,810, and of this sum $40,000 is for two locks alone, that only requires the same repairs now they wanted in 1867.

We are convinced that $10,000 will put all the locks on our works in good order and that $20,000 will secure the dams, making a total of $30,000, the interest on which at 5 per cent. would be $1,500 yearly, leaving about $600 for collection and from rents alone, to say nothing of tolls and increased rents from other machinery. Hoping you will reconsider the matter and give the required help.

D. THOMPSON, [SEAL.]
President, H. N. Co. L.

ADAM A. DAVIS,
Secretary, H. N. Co. L.

DEPARTMENT OF PUBLIC WORKS, ONTARIO.
TORONTO, 12th March, 1874.

Hon. A. MCKELLAR,
Commissioner of Public Works.

SIR,—In a communication addressed to you by the President and Secretary of the Haldimand Navigation Company, they make objection to the correctness of a recent report made by me on the condition of the Grand River works, and state that the estimated cost of reconstruction and repairs, does not tally with that given in a report made by me on the same works in 1867. I wish to reply in explanation that it is not at all likely that the works can be in the same condition as they were seven years ago, and even if they were, that the same class of work and materials required then would cost thirty per cent. more if used now. With regard to the details of my recent report, the examination was made by Mr. Holwell, C. E., and he reports two of the locks as requiring entire reconstruction. On this report I have estimated the cost of doing so, believing that most of the stone, and all the timber required for the purpose would have to be purchased, and brought from a distance, as little of the old material could be utilized. If the reconstruction of these locks can be dispensed with, then the repairs of the locks would not exceeed the amount stated in the President's letter

I have the honor to remain,
Your obedient servant,

T. N. MOLESWORTH

York County of Haldimand,
July 10th, 1874.

Hon. O. Mowat,
Attorney-General of the Province of Ontario.

Sir,—I have the honor to submit for your consideration, the following statements relative to the works on the Grand River for which Government aid has been solicited.

Also statements of rents derived from said works as well as the value of properties at the several dams.

1st That the works are composed of the larger portion of those formerly owned by the Grand River Navigation Company incorporated in the year 1832, and extends from Cayuga to Brantford, a distance of about thirty miles.

2nd. That the Grand River Navigation Company borrowed from the town of Brantford a sum of money, and not being able to pay the same when due, the town of Brantford by order from the Court of Chancery, got a Receiver appointed who collected all the rents, tolls, etc., he could (spending as little as possible in repairs), and thus the works were allowed to go down and become so rotten as to break away several times, leaving the mill-dams dry and the barges useless, the town of Brantford at last refused to spend any more money on the works.

3rd. This was the state of things when during the session of '70-'71 of the Ontario Parliament, the property-holders on the works in order to try and keep them up were granted a charter incorporating them under the name of the Haldimand Navigation Company, Limited, having previously made an agreement with the Town of Brantford, that the works should be given over to the Company, when the stock, $10,000 was subscribed and 10 per cent. paid in.

4th. That the stock has been called in and paid and it together with the rents, tolls and money received from some land sales, has been expended on the works during the three years the H. N. Co., L. has been in possession, a sum equal to $20,000 and yet there are three of the dams in a very bad state of repair, one of those now broken leaving a cabinet factory and a saw mill entirely worthless and throwing some twenty men out of employment.

5th. There are five dams in all and at each of them during the ownership of the Grand River Navigation Co., mills, factories, etc. were erected in the belief that a never-failing supply of water would be had and that such property would always be remunerative and valuable, and feeling convinced that the largest river in Ontario west of the Ottawa would not be neglected, yet unless assistance can now be obtained, all the following named property may next spring be rendered worthless and most of the owners ruined.

At dam No. 1, Indiana and Mount Healy—

2 Large Flouring Mills,
1 Carding Mill,
2 Machine Shops,
2 Saw Mills,
2 Plaster Mills,
} Value $60,000.00

At dam No. 2, York—

1 Flour Mill,
1 Plaster Mill,
} Value $10,000.00

At dam No. 3, Millfield—

1 Cabinet Factory,
1 Saw Mill, } Value $5,000.00

At dam No. 4, Seneca—

1 Carding Mill. Value $2,000.00,

At dam No. 5, Caledonia—

2 Large Flouring Mills,
1 Brick Woolen Factory,
1 Large Saw Mill, } Value $60,000.00.

In all one hundred and thirty-seven thousand dollars, not including the loss that would fall on the owners of the Great Oneida Plaster Beds, which cannot be worked without the water power and these plaster beds now furnish work to some fifty men the year round, and from them is yearly shipped six thousand tons.

6th. As to the report made to the Commissioner of Public Works by T. H Molesworth, Esq., on the 10th of February last, twenty years experience here proves it to be entirely at fault, and it does not tally with the report made by the same gentleman for the town of Brantford in 1867 (a copy of both reports is herewith enclosed); in the report of 1867, Estimate No. 2, Mr. Molesworth puts the cost of giving two feet depth of water including excavations, repairs of locks and entire re-construction of lock at Brantford at $44,664.00, while in report of February last, without any excavation or any repairs to dams at Brantford, less work is put at $51,800.00, and of this sum $40,000 is for two locks alone, which can be put in good order for one-tenth of the sum.

7th. We are satisfied that $25,000.00 or at most $30,000.00 would make all the dams safe and put the locks in good repair and ample security can be given for the payment of the interest on this amount from water rents alone, not including either tolls on plaster, etc., or other ground rents. The water rents at present amount to $2,246.00 per year, payable half-yearly and these would be greatly increased by additional machinery if the dams were made secure. The collection of these rents we are prepared to hand over to whoever Government may appoint to receive them. The list of property-holders, together with their yearly rents, which is herewith enclosed, will show that the interest on $30,000.00 at 5 per cent. is perfectly safe as well as leaving sufficient to pay the collector.

It may be asked if these figures are correct. Why has it not paid the present owners? The answer is this, that when any of the dams break it affects the whole work by not only stopping all the machinery on the broken dam, but the navigation the entire length and the works were in such a bad state when received from the town of Brantford that the capital stock of the company was only sufficient to secure two of the dams and a part of the third, leaving the others untouched; it will therefore be seen that the difficulty was and is in not having means enough to secure all the dams at once.

8th. Apart from the private interests at stake on this river, we claim we have a right to Government aid on the ground of simple justice to our county as compared with other counties and to the importance of the maintenance of these works as well as other such works throughout the province. An arrangement was made with the lumbermen and others of the counties of Peterborough and Victoria that if they would advance $15,000.00 or $20,000.00 to improve the works

on Gull and Burnt River, that Government would put an equal amount in the estimates last session of Parliament and recoup them their advance; that then the Government would put on a collector to collect dues, etc., on timber passing through in order to repay themselves. Our case is just similar, the only difference being that from Gull and Burnt River, Government get dues on timber, and from the Grand River, Government will get water rents, tolls, etc., etc. The case of the Grand River should be looked upon with more favor by the Government inasmuch as we do not ask to be recouped our outlay of $20,000.00, but simply to give a grant or loan sufficient to finish our work so that what we have expended will not be lost and we are quite willing that Government shall put on their collector to receive rents, tolls, etc., to pay themselves back; this, we claim, is only even-handed justice, for while not a cent has ever been expended on public works in the County of Haldimand, notwithstanding the unswerving support it has always given to reform government large sums have been spent in other counties and in the improvement of rivers not so important as the Grand River, for instance, Scugog River, Kaministiquia River, cut between lakes Joseph and Roussa, Sydenham River, Nottawasaga River, Thames River, Burnt and Gull Rivers, and large sums have been given to aid railway companies. It may be said that these improvements were made in some cases to open up new settlements, but it should not be forgotten that this part of the country was once a new settlement also where no public aid was given and each settler had to carve out a home for himself, make his own roads and pay three and four dollars per acre for his land besides, and if the timber is now pretty much gone from the Grand River valley, and no dues to be got from that source, the country got the benefit while it was going and there is so much the more need for securing the water power as it cannot be replaced by steam owing to the scarcity of wood. The statement made in Mr. Molesworth's report that the traffic has been diverted from the river by reason of railways is to a certain extent correct, yet if all the railways in Canada crossed the Grand River they would be of no benefit to the manufacturers of flour, lumber, plaster, etc., unless the water power is maintained, and while it is kept up the navigation will always be more or less used for carrying purposes, and will be of great importance to a large section of Ontario. Should a renewal of the reciprocity treaty be affected and even as it now is, all the gristing, wool carding and spinning, sawing of lumber, etc., etc., that is required by the entire population for a distance of from six to ten miles on both sides of the river is done by the machinery at present in use and let any security be felt in the maintenance of the works and the machinery and rents would be largely increased.

NAMES OF TENANTS AND YEARLY RENTS.

Dam No. 1, Flour Mill, David Thompson	$80 00
Carding Mill, James Lees	50 00
Machine Shop, Geo. Kirkland	40 00
Machine Shop, Thos. Madgett	40 00
Amount carried forward	$210 00
Dam No. 1, Con. 1, Saw Mill, Geo. Stevenson	$190 00
Plaster Mill, Alex. Taylor	100 00
Flour Mill, John Donaldson	160 00
Plaster and Saw Mills, Wm. Donaldson & Co.	275 00

Dam No. 2,	Plaster Mill, Thos. Martindale	$140 00	
	Flour Mill, A. A. Davis	160 00	
	Ground Rent, J. A. Mallon	20 00	
	Ground Rent, John Young	10 00	
Dam No. 3,	Saw Mill, C. Baker	100 00	
	Cabinet Factory, Wm. Wilson	66 00	
	Cabinet Factory, Wm. Hall	25 00	
Dam No. 4,	Carding Mill, J. Disher	60 00	
Dam No. 5,	Flour Mill, McQuarrie and Thorburn	240 00	
	Flour Mill, McQuarrie, Thorburn & Munroe	240 00	
	Saw Mill, Jas. Ball	150 00	
	Woolen Factory, Morris & Co	60 00	
	Water Pump, H. L. S. E. R. R. Co	40 00	
			$2,246 00

There is an addition to this $2,246.00, an income of $50.00 from ground rent in the town of Caledonia, making a total of $2,296.00 yearly, should the dams be maintained in repair.

I have the honor to remain,
Your obedient servant,

(Signed) ADAM A. DAVIS,
Secretary H. N. Co., L.

York, Co. of Haldimand, July 15th, 1874.

The Honourable,
The Attorney-General of Ontario.

Sir,—I have the honor to forward report on Grand River works as requested at the interview you kindly gave the deputation from here on Tuesday, the 7th inst. I have submitted it to Dr. Baxter, M.P.P., who desires me to say he is quite satisfied it is correct.

Your obedient servant,

(Signed) ADAM A. DAVIS,
Secretary H. N. Co. L.

CAYUGA, July 20th, 1874.

Hon. O. MOWAT,
Attorney-General, Toronto

DEAR SIR,—I saw the statement prepared by Mr Davis in regard to the Navigation Works on the Grand River, and it is quite correct and may be relied upon. Last year the County Council of Haldimand, as well as the Council of the Town of Brantford, petitioned for the aid we are seeking, a fact I omitted to mention when we had the interview with you. Should you require any further information upon any point, we will be most happy to furnish it. I hope and trust that the Government will be able to take a favorable view of the case and to grant such aid as will put the works in a proper state of repair. These works are certainly beyond the means of private individuals to keep up and it would be a great misfortune indeed should they go down and all the valuable property in mills and factories be rendered useless. A very strong feeling has gone abroad amongst our friends in this section of the country that we have a just claim upon the Government, and many go so far as to say that our failure heretofore has been caused by a want of influence on my part with the Government, and a lack of zeal in properly representing the matter to Ministers. I feel satisfied that the claim for aid is one that should receive attention, and failure on the part of the Governmet to render some assistance to this important work will not only be a disappointment, but will, I fear be looked upon as an act of unfriendliness. I have no personal interest in the property, but the more I consider the matter, the more I am convinced that the claim upon the Government is a just one.

Trusting that your consideration of the case my lead to a favorable result.

I have the honor to be,
Your obedient servant,

(Signed) J. BAXTER. M.P.P.

DEPARTMENT OF PUBLIC WORKS, ONTARIO,
TORONTO, 6th November, 1874.

Hon. C. F. FRASER,
Commissioner of Public Works.

SIR,—On the 18th of September, I made a personal inspection of that portion of the Grand River Navigation Works extending from Indiana to Caledonia. The entire Grand River Navigation, as originally constructed, may be said to extent from Dunnville to Brantford, but the deep water navigation of the river between Dunnville and Cayuga, is kept up by the dam at Dunnville constructed for the water supply of the Welland Canal, and therefore the Grand River Navigation Works are considered to extend from Cayuga to Brantford. Of these works, that portion between Indiana and Calidonia have been transferred, on certain conditions by the Town of Brantford, to the Haldimand Navigation Company, and it is of the works so transferred and of their present use that I have to report as follows:

1st. *The Works and their conditions.*

At Indiana there is a lock in fair condition except the gates which require renewal.

There are some shallows below the lock which require dredging.

Above the lock a channel formed partly by excavations and partly by embankment, extends as far as Dam No. 1 at Mount Healy. Some parts of this channel also require dredging.

The Mount Healy dam which forms a part of the Indiana works, consists of a series of dams and embankments crossing the river where it is intersected by Islands. The embankments are in many places out of repair and require additional width and slope and the whole work requires large repairs.

At York, lock No. 2 requires new gates. The dam No. 2 at the same place about 600 feet in length, has been partially repaired this year, but requires considerable additional work to put it in good condition.

At Milfield, lock No. 3 requires new gates and some additional repairs.

The dam No. 3 at the same place is about 500 feet long, has about 100 feet in length broken away, and requires considerable repairs and a new apron.

At Seneca, lock No. 4 requires new gates, etc., but otherwise in fair order for the navigation required.

The dam No. 4 requires repairs throughout in addition to about 200 feet in length of embankment.

At Caledonia, lock No. 5 requires new gates and some repairs.

The dam has been repaired throughout within the last two years, but requires some additional work.

2nd. *Present use of the Works.*

At Indiana I met Dr. Baxter, M.P.P., Mr. David Thompson, M.P., and Mr. Davis the superintendent of the works, and in conversation with them I ascertained that it is not proposed to make any change in the size or depth of barges navigating the river, and that the present depth of water on the shoals and mitre sills may remain unaltered. These, when I examined the works, gave an average depth of 2½ feet of water on the mitre sills of the locks, but the water has about its lowest stage and the season has been a dry one.

The barges in use on the river are mostly employed in carrying coal and plaster, the latter from the mines at York and other points from whence a large quantity is shipped annually.

In addition to the use of the works for the transit of barges, the water power at each of the dams is utilized for driving machinery from which much benefit accrues to the localities and surrounding country.

A list of mills worked is as follows:—

Indiana:

Taylor's plaster mill at the dam.
Stephenson's saw mill on the cut.
Madgett's machine shop on the cut.
Kirkland's " " " " "
Lee's carding mill on the cut.
Thompsons flouuring mill on the cut.

Mount Healy:

A saw mill, plaster mill and grist mill. (2 run stones)

York:

A flour mill (2 run stones) a plaster mill and two vacant privileges.

Milfield dam:

One saw mill and cabinet factory.

Caledonia:

South side river, Balmoral flour mills (3 run stones).

North side river, Caledonia flour mills (3 run stones).

Ball's saw mill, a file factory, a woollen factory and one vacant mill privilege.

The income from rents of mill privileges is stated by the President of the Navigation Co., to exceed $2,000 per annum, and the Directors are willing to give this income to cover the interest of whatever sum may be advanced to put the works in good condition, provided the Government are disposed to meet their view on that subject.

3rd. *List of repairs*:

Having made a personal inspection of the works between Indiana and Caledonia which I was unable to do last year, I feel it necessary to modify the estimate I then gave of the cost of repairs, the more especially as with regard to the locks, I see that with the light draft of the barges which the company consider sufficient for the navigation, it will not become necessary to reconstruct any of the lock chambers, while at the same time I find the repairs required on the several dams and embankments, much heavier than those shewn in the notes furnished me of the examination made last year.

I estimated the whole cost of repairing the locks inclusive of new gates throughout, and of the dams and embankments to place all in good condition at the sum of $33,500.

I have the honor to remain,
Your obedient servant,

(Signed) T. N. MOLESWORTH,
Engineer.

PUBLIC NOTICE.

The ratepayers of Cayuga and the vicinity are requested to meet at the Town Hall, in Cayuga, at seven o'clock Monday evening, for the purpose of advising the council of the corporation as to the best means of reviving the navigation and water power of Grand River, between Cayuga and Brantford, with railway service in aid thereof.

D. T. ROGERS,
Reeve of Cayuga,
County of Haldimand.

Dated at Cayuga, 1st March, 1890.

Copy of a resolution passed by the municipal council of the Village of Cayuga, at a regular meeting held on Monday evening, March 3rd, 1890.

Moved by Mr. McClung, seconded by Mr. Baird, and resolved, That the reeve and clerk be empowered by this council to sign the petition to the Legislative Assembly praying for a grant to revive the Grand River Navigation Co.

D. T. ROGERS,
Reeve.

E. C. CAMPBELL,
Clerk.

Copy of a resolution passed at a public meeting of the ratepayers of the Village of Cayuga, and vicinity, holden at the Town Hall there, on the 3rd March, 1890.

Moved by E. S. Martin, seconded by Thomas Humphrey, Jr., That the following named gentlemen:—Thomas Martindale, John R. Martin, C. W. Coulter, Evan S. Martin and E. Cameron, be a committee appointed to act conjointly with the village council to draft a petition to the Legislative Assembly, praying them to grant a sum of money in aid of the revival of the navigation of the Grand River and the water powers thereon from Cayuga to Brantford, and for the construction of a light tram railway along the margin of the said river from Caledonia to Dunnville to aid in utilizing the same.

D. T. ROGERS,
Chairman.

Cayuga, 3rd March, 1890.

To His Excellency Sir Alexander Campbell, K.C.M.G.,
Lieutenant-Governor of the Province of Ontario.

May it please your Excellency:

The petition of the undersigned representing the inhabitants of the Town of Cayuga, the county town of the County of Haldimand, and the inhabitants in the vicinity of the Grand River, from there to Caledonia, etc., humbly sheweth:—

1. That the works of the Haldimand Navigation Company (Limited), are composed of the larger portion of those formerly owned by the Grand River Navigation Company, incorporated in the year 1832, for the purpose of continuing the navigation of the said river from Cayuga where the Welland Canal system of navigation ends, to the City of Brantford, and also for the purpose of creating water powers for milling and other manufacturing purposes,

2. That the said navigation is now practically ended for the want of means to keep up the works, and the water powers formerly existing on and the same for the most part destroyed, and the industries that formerly existed now nearly extinguished.

3. That in order to receive the same, a dam is required above Cayuga and a cut therefrom to Cayuga for water power, and a lock for navigation purposes and the present cut from Indiana or Dean's to York dam requires deepening and extension.

4. That a small sum would repair the York dam and Lock and continue the navigation to the old lock No. 3 of the said Grand River Navigation Company's works. From thence the cut would require deepening and extension to Caledonia dam with a lock there and and intervening lock between Caledonia and said lock No. 3, thereby creating an additional water power when required. From there to Brantford, some 80 miles, the navigation is now complete.

5. That the said Haldimand Navigation Company (Limited), have no means to revive said works, and are consenting parties to this petition, and purpose applying for the amendment and extension of their "Act of Incorporation" so as to enable them to carry on the contemplated works.

6. These works extend from Cayuga to Brantford, a distance of over 32 miles along the Grand River which is the largest river in Ontario west of Ottawa, possessing natural water powers and privileges second to none in the Province, capable of propelling a large amount of machinery, facts seemingly not generally known or neglected.

7. That the portion of the valley of said Grand River extending from Caledonia to Cayuga and thence to Dunnville is very fertile, and largely supplied with gypsum salt and other minerals, etc., well inhabited but suffering greatly from the want of said navigation, from not being served by any line of railway and the villages along the same have thereby been caused to fall into decay and the industries formerly existing have nearly or wholly ceased for the present.

8. From Port Maitland to Cayuga there is deep water navigable for lake schooners which come to that port with coal and lumber, etc., and return with gypsum, grain, plaster and timber, lime, etc.

9. There are large tracts of valuable lands lying along both sides of the lower river, now marshy, the drainage whereof would add greatly to the healthfulness of this sectiou of the country, and would render them of untold value for growing material for paper manufacture, cardage, etc., which drainage could be performed at moderate cost.

10. Owing to the great extent of these works and the great necessity that exists for keeping them up, we pray your Excellency to cause a sum of money to be placed in the estimates to be laid before your Parliament at its present sessions, to aid your petitioners in the completion and maintenance of said works on a reduced scale, and in the construction of a light train railway along the margin of said navigation from Caledonia, where the Grand Trunk Railway approaches the river to said Town of Cayuga, and thence eastward along the margin of said river to the works of the Gypsum Mining and Calcine Company, continuing on along the river to connect with the Grand Trunk Railway which again nears the river at Dunnville, so that capitalists may have security when they invest their money in erecting factories, etc. thereon, that it will not be lost for want of means to keep said works in repair, and for want of facilities to reach markets, etc.

11. We base our petition for aid on the fact that Government has granted similar aid to railway companies and to other works of the same nature in order to assist in developing the resources of the country, and this enterprise is of as much importance to a large section of this Province, as any railway can be.

12. The navigation of this river is of great importance to the carrying trade between this Province and the United States.

13. The said light train railway could be well supported, chiefly in winter, by carrying passengers, the transport of mails, and immense tonnage of gypsum, brick, lumber, timber, stone, tiles, and other heavy commodities.

14. Your petitioners therefore submit that these important works are worthy of your Excellency's serious consideration, and beg you will give them your kind attention, and by so doing you will confer a lasting benefit on a large section of this Province.

And your petitioners as in duty bound will ever pray.

E. A. CAMPBELL, Clerk. (Signed.) D. T. ROGERS, Reeve of Cayuga. J. R. MARTIN, For Committee.

Cayuga, March 5th, 1890.

SPEAKER'S CHAMBER, LEGISLATIVE ASSEMBLY,
TORONTO, March 7, 1890,

HON. J. M. GIBSON,
Prov. Secretary.

DEAR SIR,—I herewith enclose petition of the municipality of the Village of Cayuga, addressed to His Honour the Lieutenant-Governor, praying that a sum of money may be put in the estimates for the improvement of the navigation of the Grand River.

Your obedient servant,
(Signed) J. BAXTER.

TORONTO, March 10, 1890.

SIR,—I have the honour to acknowledge the receipt of your letter of the 7th instant, covering petition of the municipality of the Village of Cayuga, addressed to His Honour the Lieutenant-Governor, praying that a sum of money may be put in the estimates for the improvement of the navigation of the Grand River, and to inform you that the subject will receive due consideration.

I have the honour to be, Sir,
Your obedient servant,

G. E. LUMSDEN,
Assistant Secretary.

The Honourable JACOB BAXTER,
Legislative Assembly.

ANNUAL REPORT

OF THE

BUREAU OF INDUSTRIES

FOR THE

PROVINCE OF ONTARIO

1889.

PARTS I, II. AND III.—AGRICULTURAL STATISTICS.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

TORONTO:
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1890.

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EIGHTH ANNUAL REPORT

OF THE

BUREAU OF INDUSTRIES.

PARTS I, II AND III.

To the Honorable Minister of Agriculture:

Sir,—I have the honor to present herewith Parts I, II and III of the eighth annual report of the Bureau of Industries, being the Agricultural Statistics of Ontario for the year 1889.

I have the honor to be, Sir,
Your obedient servant,

A. BLUE,
Secretary.

Toronto, Sept., 1890.

PART I.

THE WEATHER AND THE CROPS.

THE WEATHER.

The chief agencies which influence the growth and condition of plant life, apart from the nature and cultivation of the soil, are temperature, precipitation and sunshine. Experience and observation enable us to know with some degree of certainty what to expect from the soils under different kinds of cultivation, for the conditions are constant. But within certain ranges the weather is changing almost daily, and although we now possess for Ontario the data of fifty years, we cannot foretell the weather of a single season, or even of a single week. Records of temperature, rainfall and sunshine are of great interest to the agriculturist and horticulturist, however, in so far as they show causes of success or failure in any direction, and an accurate knowledge of them is valuable, especially in testing new varieties of seeds, fruits and plants. The history of a crop may be read in the weather tables.

TEMPERATURE.—The growing period for the greater part of the crops of the province is found in the six months April-September. The ten stations appearing in the following table (some of them being at extreme points of the province) are well distributed geographically, and the average for the province which they show may be regarded as a fairly representative one :

Months.		Saugeen.	Birnam.	London.	Woodstock.	Stoney Creek.	Toronto.	Lindsay.	Gravenhurst	Ottawa.	Rockliffe.	Province average.
		°	°	°	°	°	°	°	°	°	°	°
April..	1889	40.1	43.4	45.8	43.8	45.4	43.5	42.2	41.6	45.0	40.0	43.1
	1882-9	38.3	41.8	42.3	41.4	42.0	40.4	38.7	37.3	39.3	36.3	39.8
May ..	1889	50.9	54.1	57.0	55.4	57.4	54.0	54.8	54.8	57.8	53.3	54.9
	1882-9	49.6	54.5	54.9	53.7	53.6	52.2	52.8	52.1	56.0	51.3	53.1
June ..	1889	55.0	61.3	63.7	62.3	62.2	59.7	59.4	58.8	63.1	57.5	60.3
	1882-9	59.0	63.5	64.1	64.0	64.2	62.3	62.6	62.0	65.5	60.5	62.7
July ..	1889	65.2	67.2	71.0	68.8	71.5	68.9	67.1	68.0	69.6	65.3	68.2
	1882-9	63.6	67.7	68.4	68.1	70.0	67.5	66.4	66.3	69.0	64.5	67.1
August	1889	62.8	66.3	68.7	65.9	68.8	65.0	62.2	62.8	65.2	59.4	64.5
	1882-9	62.6	65.7	65.3	64.8	67.9	65.4	63.4	63.3	65.5	61.3	64.5
Sept'r .	1889	57.3	60.5	62.5	59.9	61.8	60.0	58.0	59.3	59.6	54.1	59.3
	1882-9	56.5	59.5	58.6	58.4	60.6	58.4	55.9	56.1	57.0	53.3	57.4
Av. for 6 m'ths.	1889	55.2	58.8	61.4	59.3	61.2	58.5	57.3	57.6	60.1	54.9	58.4
	1882-9	54.9	58.8	58.9	58.4	59.7	57.7	56.6	56.2	58.7	54.5	57.4

The average of the province for the six months shows an increase in temperature of 1° compared with the average for the eight years 1882-9, an increase being observed at

every station excepting Birnam, where the temperature was the same as the average of eight years. The greatest difference, 2.5°, was registered at London, which station had the highest average for the six months, the lowest being at Rockliffe. The temperature of the province for the month of August was exactly the same as that of its average for the eight years, but the month of June fell 2.4° below its own average. An increase took place in the other four months as follows: April 3.3°, May 1.8°, July 2.1°, September 1.9°. The comparatively high temperature of April was general throughout the province, every station showing an increase over its average for the eight years. In May the same thing prevailed, except at Birnam, where the temperature failed by .4° to reach its average. In June not a single station rose to its average record, and there was a difference of 4° in the figures for Saugeen for the year and for the eight years. The highest average temperature for any month is credited to Stoney Creek, being 71.5° in July. The lowest temperature for that month is seen at Saugeen, in the northwest, where the figures read 65.2°, and at Rockliffe, in the northeast, where the temperature was only .1° higher. Every station recorded an increase in September, that at London amounting to 3.9°. The highest average temperature for each month was noted as follows: April at London, May at Ottawa, June at London, July at Stoney Creek, August at Stoney Creek and September at London.

Precipitation.—The snowfall has an important bearing upon agriculture in this province, inasmuch as fall wheat, winter rye and clover depend greatly upon the shelter which it affords. In the following table the precipitation of rain and snow during the five winter months is given for 1888 and 1889, together with the average for the same months in the eight years 1882-9:

Months.		West and southwest.		Northwest and north.		Centre.		East and northeast.		Province averages.	
		Rain.	Snow.	Rain.	Snow.	Rain.	Snow.	Rain.	Snow.	Rain.	Snow.
		inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.
November	1888	2.79	1.7	2.87	8.3	2.70	2.0	3.25	3.5	2.90	3.9
	1887	2.50	5.6	1.54	18.4	2.35	6.3	1.51	8.7	1.98	9.8
	1882-8	2.29	6.3	2.13	15.0	2.11	5.3	1.93	9.3	2.12	9.0
December	1888	1.24	5.4	1.14	8.5	0.95	3.2	1.00	5.6	1.08	5.7
	1887	2.16	13.9	1.55	18.9	2.09	15.4	1.47	11.1	1.82	14.8
	1882-8	1.25	16.3	1.09	23.1	1.17	13.1	0.97	15.6	1.12	17.0
January	1889	1.78	16.0	0.90	26.6	1.53	20.7	1.52	24.4	1.43	21.9
	1888	0.86	15.5	0.27	21.5	0.95	15.6	0.22	15.2	0.57	16.9
	1882-9	1.12	18.3	1.00	30.5	1.16	19.6	0.92	23.7	1.05	23.0
February	1889	0.41	19.8	0.18	30.6	0.31	16.8	0.15	27.1	0.26	23.6
	1888	1.11	5.1	0.53	14.3	0.83	5.9	0.59	11.7	0.77	9.3
	1882-9	1.67	11.9	0.71	22.6	1.27	12.1	0.72	19.3	1.09	16.5
March	1889	0.29	6.2	R	6.9	R	8.3	R	4.5	0.08	6.5
	1888	2.07	10.6	1.36	20.4	1.92	8.5	1.38	14.2	1.68	13.4
	1882-9	1.28	10.7	0.88	14.0	1.12	9.9	0.86	14.4	1.04	12.2
Total	1889	6.51	49.1	5.09	80.9	5.49	51.0	5.92	65.1	5.75	61.5
	1888	8.70	50.7	5.25	93.5	8.14	51.7	5.17	60.9	6.82	64.2
	1882-9	7.61	63.5	5.80	105.0	6.83	60.0	5.40	82.3	6.41	77.7

Both the rain and snowfall for the five months are below that of the previous year, and there are .66 inch of rain and 16.2 inches of snow less than the average for the eight years 1882-9. On the basis of an inch of rain being the equivalent of ten inches of snow, the combined precipitation was equal to 2.28 inches of rain less than the average of the province for the eight years. All the districts show a decrease both in rain and snowfall compared with the previous year and with the eight years, excepting the east and

northeast district, where the rain exceeds that of both periods and the snow that of 1888, although the latter falls short of the average precipitation of snow for the eight years by 16.2 inches. The greatest snowfall for the year is noted in the northwest and north district, a very common occurrence, although it is less than in the previous year and less still than the average for the eight years. The greatest total precipitation also occurred in that district. The snowfall in the latter part of 1888 was very light. In November only 3 9 inches fell, against an average for the eight years of 9 inches, and in December but 5.7 inches were recorded, compared with an average of 17 for the eight years. The previous year's snowfall was exceeded by 5 inches in January, yet the average of the month for 1882-9 was not equalled by 1.1 inches. In February 23.6 inches fell, compared with 9.3 inches in the previous year and 16.5 inches for the eight years. In March the snowfall was but little more than half its usual record. Rain prevailed to an unusual extent in November and January, but in February there was a considerable decrease compared with the average for that month. The light rainfall of March was something extraordinary, reaching only an average of .8 inch for the province. In three districts the fall was so light that measurement was not practicable. The greatest fall of snow in any month was recorded in the northwest and north district in February, amounting to 11.6 inches, and exceeding the average of any other month for the eight years.

The question of rainfall, however, is of much more importance during the six months forming the growing season. The following table affords an interesting comparison of the precipitation during the period April-September, compared with the average of the eight years 1882-9 :

Months.	West and southwest.		Northwest and north.		Centre.		East and northeast.		Province averages.	
	1889	1882-9	1889	1882-9	1889	1882-9	1889	1882-9	1889	1882-9
	inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.
April	1.62	1.61	1.11	1.31	1.87	1.54	1.31	1.35	1.48	1.45
May	4.62	3.23	3.68	2.61	3.86	2.69	3.33	2.48	3.87	2.75
June	3.57	3.29	3.77	2.87	3.60	3.03	3.86	2.83	3.70	3.01
July	1.50	2.57	2.49	2.37	2.23	2.30	3.11	2.82	2.33	2.51
August....	0.58	2.65	1.60	2.49	0.75	2.22	1.60	2.51	1.13	2.47
September.	2.03	2.42	3.26	3.07	1.63	2.47	2.07	2.62	2.25	2.65
Totals.....	13.92	15.77	15.91	14.72	13.94	14.25	15.28	14.61	14.76	14.84

The rainfall for the province is .08 inch less than the average for the eight years. A decrease is observed in the west and southwest and the centre districts, while the other two districts exceed their averages for the eight years. May was the wettest month, there being 3.87 inches of rain, while June came next with 3.70 inches. April, May and June went over their respective averages, while the other three months were under theirs. The greatest precipitation for the six months is seen in the northwest and north district, and the lightest is noted in the west and southwest district. The heaviest fall of rain in any month was observed in the west and southwest district in May, when 4.62 inches were registered, and the lightest fall was experienced in the same district in August, when only .58 inch of rain came down.

Sunshine.—In studying the following table it is well to remember that the possible duration of sunshine for the six months (calculated for the latitude of Toronto) is

2,614.9 hours, being divided as follows: April 406.4, May 461.1, June 465.7, July, 470.9, August 434.5, September 376.3.

Months.		Woodstock.	Toronto.	Barrie.	Lindsay.	Kingston.	Province averages.	Sun above horizon in latitude of Toronto.
		hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.
April	1889	178.9	189.8	170.1	209.5	197.1	189.1	406.4
	1888	194.5	229.1	216.4	217.2	206.2	210.4	
	1883-9	191.3	192.3	165.6	202.9	189.7	188.4	
May	1889	197.1	202.3	197.6	198.3	204.1	199.9	461.1
	1888	183.0	189.7	158.1	195.9	212.5	191.3	
	1883-9	205.1	225.0	202.3	224.9	219.7	215.4	
June	1889	169.3	181.3	111.7	171.9	187.9	164.4	465.7
	1888	256.6	289.1	270.1	306.5	286.2	279.9	
	1883-9	237.6	263.0	224.5	258.0	242.1	245.0	
July	1889	274.1	303.2	271.2	298.4	274.6	284 3	470.9
	1888	269.5	282.4	252.5	279.7	315.7	281.9	
	1883-9	265.5	287.7	257.6	282.1	266.2	271.8	
August	1889	240.7	229.8	215.6	229.3	222.9	227.7	434.5
	1888	245.8	258.5	243.0	227.7	245.3	245.9	
	1883-9	229.4	254.2	214.2	236.9	250.1	237.0	
Sept.	1889	189.8	203.9	159.2	198.9	177.6	185.9	376 3
	1888	219.8	227.7	189.1	206.2	213.6	209.4	
	1883-9	198.4	212.8	139.8	204.6	200.1	191.1	
Totals	1889	1,249.9	1,310.3	1,125.4	1,306.3	1,264.2	1,251.3	2614.9
	1888	1,369.2	1,476.5	1,329.2	1,433.2	1,479.5	1,418.8	
	1883-9	1,327.3	1,435.0	1,204.0	1,409.4	1,367.9	1,348.7	

The number of hours of sunshine in the province for the six months is barely 48 per cent. of the possible. It will be seen that there is a considerable falling off compared with the previous year and with the average of the seven years 1883-9, the difference in the latter case amounting to 97 hours. None of the five stations registered as much sunshine as in the preceding year, or equalled their average for the seven years period. The least amount of sunshine for the whole six months was noted at Barrie and the greatest at Toronto. July was the brightest month, exceeding its figures for the previous year and the average for the seven years. April also surpassed its average for the seven years, but had less sunshine than in 1888. May was brighter than in the preceding year, but did not reach its average for the term of years. Absence of sunshine was experienced to an unusual degree in June, when the hours registered amounted to only 164.4, compared with 279.9 in the previous year and an average of 245.0 for the seven years. During that month only 111.7 hours were registered at Barrie, and the highest record (that of Kingston) was greatly below the average of the province for the previous year or for the seven years. August and September each fell behind their record for the previous year and the average for the seven years. The greatest number of hours of sunshine in each of the various months was registered at the following stations: April at Lindsay, May at Kingston, June at Kingston, July at Toronto, August at Woodstock, September at Toronto.

FARM LANDS OF THE PROVINCE.

Rural Areas Assessed.—The statistics in the table following are for townships which are municipally organised, and are compiled from the assessors' returns. The acreage assessed, and that of woodland, swamp and waste land are for 1889, and the

acres cleared are given for 1888 and 1889, the whole being shown by county groups and for the province :

Districts.	Acres assessed.			Acres cleared.		Acres woodland.	Acres swamp, marsh or waste.	Per cent. cleared.
	Resident.	Non-resident.	Total.	1889.	1888.			
Lake Erie... ...	2,281,632	61,630	2,343,262	1,366,784	1,334,460	866,679	109,799	58.3
Lake Huron.....	2,197,982	72,106	2,270,088	1,301,764	1,258,315	771,591	196,733	57.3
Georgian Bay....	1,937,597	86,624	2,024,221	1,027,155	1,008,510	787,759	209,307	50.7
West Midland ..	3,204,151	46,379	3,250,530	2,271,604	2,234,655	663,350	315,576	69.9
Lake Ontario....	3,008,240	41,297	3,049,537	2,270,818	2,273,085	538,657	240,062	74.5
St. Law. & Ottawa	4,997,318	279,709	5,277,027	2,284,429	2,245,912	2,189,722	802,876	43.3
East Midland ...	2,463,163	193,501	2,656,664	824,450	826,626	1,512,670	319,544	31.0
North'n Districts.	1,203,936	203,373	1,407,309	138,104	129,714	1,120,753	148,452	9.8
The Province. 1889 .	21,294,019	984,619	22,278,638	11,485,108	.....	8,451,181	2,342,349	51.5
The Province. 1888..	20,871,342	1,236,849	22,108,181	.....	11,311,277	8,663,293	2,233,611	51.2

The total rural area assessed is 22,278,638 acres, being 170,457 more than in the previous year, a number of new municipalities in the Northern districts having been organised. The acreage of non-resident land has decreased by 252,230, but this is chiefly owing to the fact that an extensive area in Haliburton owned by a land company has been assessed as resident, while in the previous year it was scheduled as non-resident. An increase in the acreage of cleared land is noticed in all but the Lake Ontario and East Midland groups, but in those latter groups the decrease is evidently a result of errors in the assessment rolls. The highest percentage of cleared land is found in the Lake Ontario counties, the West Midland group coming next.

Area in Crops.—The number of acres under staple field crops is given in the appended table for each of the five years 1885 9, together with the averages for the last five and eight years respectively :

Field Crops.	1889.	1888.	1887.	1886.	1885.	1885 9.	1882 9.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Fall wheat	822,115	826,537	897,743	886,402	875,136	861,587	932,300
Spring wheat.....	398,610	367,850	484,821	577,465	799,463	525,642	565,385
Barley	875,286	895,432	767,346	735,778	597,873	774,343	772,245
Oats	1,923,444	1,849,868	1,682,463	1,621,901	1,543,745	1,724,284	1,613,631
Rye	90,106	84,087	68,362	67,779	78,293	77,725	108,179
Pease	708,068	696,653	726,756	703,936	646,081	696,299	644,495
Corn	187,116	222,971	163,893	156,494	167,831	179,661	186,732
Buckwheat.....	56,398	57,528	64,143	70,792	61,776	62,127	61,789
Beans	21,830	22,700	20,275	21,072	24,651	22,106	22,637
Potatoes	145,812	153,915	140,283	140,143	159,741	147,979	154,522
Mangel-wurzels.....	21,211	21,459	17,924	18,170	16,435	19,040	18,319
Carrots	11,261	11,524	9,110	9,267	9,024	10,037	10,300
Turnips	111,103	113,188	105,322	98,931	102,303	106,169	101,537
Hay and clover.....	2,386,223	2,292,638	2,280,643	2,295,151	2,268,091	2,304,549	2,236,622
Totals.....	7,758,583	7,616,350	7,429,084	7,403,281	7,350,443	7,511,548	7,428,693

The total area under crop is 7,758,583 acres, being 142,230 more than in 1888, and more also than in any other period in the table. A decrease, however, is observed in the

acreage of fall wheat, barley, corn, buckwheat, beans, potatoes, mangel-wurzels, carrots and turnips compared with the previous year. Spring wheat makes its first increase in four years. The area of hay and clover has been increased by 93,585 acres, and is now nearly 31 per cent. of the whole area devoted to field crops.

The area covered by the crops named in the preceding table (and for similar average periods), is here presented by groups of counties :

Year.	Lake Erie.	Lake Huron.	Georgian Bay.	West Midland.	Lake Ontario.	St. Lawrence and Ottawa.	East Midland.	Northern Districts.	The Province.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1889.....	949,859	812,757	719,473	1,481,308	1,667,961	1,450,920	582,343	93,962	7,758,583
1888.....	958,486	801,218	690,243	1,489,263	1,635,315	1,402,502	551,102	88,221	7,616,350
1887.....	932,076	781,833	656,184	1,455,376	1,609,981	1,371,322	539,460	82,852	7,429,084
1886.....	920,626	772,120	647,156	1,426,069	1,597,507	1,396,090	562,249	81,464	7,403,281
1885.....	919,395	762,718	646,713	1,447,747	1,577,546	1,368,026	545,180	83,118	7,350,443
Average—									
1885-9.....	936,088	786,129	671,954	1,459,953	1,617,662	1,397,772	556,067	85,923	7,511,548
1882-9.....	918,820	771,833	662,301	1,450,294	1,607,816	1,380,039	555,058	82,532	7,428,693

Every group excepting the Lake Erie and West Midland Districts shows an increase compared with the previous year, and all go over their own figures in both the five and eight year periods.

Area in Pasture.—The area given to pasture appears in the following table by county groups and for the province for each of the six years 1884-9 ; also the rate of pasture land per 1,000 acres of cleared land in 1889 :

Districts.	1889.	1888.	1887.	1886.	1885.	1884.	Rate per 1,000 acres cleared in 1889.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
Lake Erie	249,623	239,330	240,586	357,906	348,323	309,696	182.6
Lake Huron	319,428	307,879	296,316	355,981	327,942	328,101	245.7
Georgian Bay	221,087	213,925	204,903	230,088	214,957	212,444	215.2
West Midland	511,618	504,840	512,349	607,906	576,195	570,833	225.2
Lake Ontario..... ...	410,416	406,620	404,893	465,587	453,066	438,011	180.7
St. Lawrence and Ottawa.	685,401	665,139	667,034	791,014	765,263	724,344	300.0
East Midland	191,194	179,823	186,850	200,968	208,254	195,076	231.9
Northern Districts	19,195	18,048	16,008	16,871	17,199	16,481	150.7
The Province	2,607,962	2,535,604	2,528,939	3,026,321	2,911,199	2,794,986	227.3

An increase has taken place in every group compared with 1888, and the total acreage of pasture in the province, viz., 2,607,962, is 72,358 more than that of the previous year. The St. Lawrence and Ottawa counties show the highest proportion of pasture per 1,000 acres cleared, the figures being exactly 300, or 30 per cent. The rate for the province was 227.3, being an increase of 3.1 over the ratio of the previous year. It should be stated that down to 1886 it was the practice of many farmers to include in their returns of pasture land all land used for grazing, whether cleared in part or whole, but since that year the schedule has called for area of pasture in cleared land only ; hence the reduced acreage in subsequent years.

PROPORTIONAL AREA UNDER CROP.—The relative distribution of the various crops per 1,000 acres of cleared land is given in the following table by county groups for the years 1888 and 1889, together with the averages for the eight years 1882-9 :

Districts.		Fall wheat.	Spring wheat.	Barley.	Oats.	Rye.	Pease.	Corn.	Buckwheat.	Beans.	Hay and clover.	Potatoes.	Mangel-wurzels.	Carrots.	Turnips.	Total.
Lake Erie....	1889	153.3	4.3	29.3	135.3	9.6	52.6	62.4	6.4	11.0	217.0	9.7	1.2	.6	2.1	694.8
	1888	164.7	4.4	30.3	137.2	10.3	52.8	81.2	6.9	11.7	203.1	11.5	1.3	.7	2.2	718.3
	1882-9	174.9	8.6	29.6	127.0	9.1	45.6	72.8	7.7	11.4	211.9	12 7	1.0	.5	1.7	714.5
Lake Huron..	1889	97.7	9.2	53.7	167.3	.8	68.1	7.6	.6	.4	197.5	8.8	2.0	.8	9.9	624.4
	1888	106.5	8.9	55.5	167.6	.8	69.9	9.5	.6	.4	193.3	10.3	2.1	.8	10.5	636.7
	1882-9	128.0	31.4	52.0	148.6	.7	65.9	8.2	.8	.5	193.6	10.8	1.9	.8	10.6	653.8
Georgian Bay.	1889	79.4	52.6	58.8	187.7	2.8	83.8	2.0	.5	.2	205.7	12.6	.7	1.0	12.7	700.5
	1888	72.5	49.7	62.6	181.3	2.8	82.5	1.9	.5	.2	201.9	13.6	.8	1.0	13.1	684.4
	1882 9	84.4	78.3	56.4	155.1	2.9	79.4	1.4	.6	.2	195.0	14.0	1.0	1.2	12.6	682.5
West Midland	1889	93.4	14.2	69.1	177.2	2.4	68.1	12.2	.8	.3	184.6	10.2	3.2	1.0	15.4	652.1
	1888	105.8	13.2	70.8	175.3	2.5	68.1	15.0	.8	.3	181.9	11.8	3.3	1.1	16.5	666.4
	1882-9	121.4	36.5	61.1	152.5	2.3	60.4	12.8	1.0	.6	186.2	12.2	2.7	1.0	15.9	666.6
Lake Ontario.	1889	64.4	54.0	155.3	143.1	13.4	71.7	14.0	7.8	.8	178.2	13.4	2.5	1.4	14.5	734.5
	1888	57.5	48.5	160.9	138.5	12.5	72.0	15.5	7.9	.8	170.0	14.3	2.5	1.4	14.6	716.9
	1882-9	73.7	72.8	134.2	125.9	14.9	66.1	13.1	6.8	1.0	181.4	14.1	2.3	1.3	12.9	720.5
St. Lawrence and Ottawa.	1889	5.5	46.6	44.4	191.5	9.7	36.1	9.5	9.7	1.3	260.7	16.6	0.8	0.7	2.0	635.1
	1888	3.6	44.8	44.1	185.6	8.4	36.0	10.2	10.0	1.4	260.2	16.7	.7	.8	2.0	624.5
	1882-9	8.1	54.2	45.4	176.0	16.1	43.6	8.3	12.6	1.4	253.5	18.0	.8	.7	1.8	640.5
East Midland.	1889	39.2	71.4	111.9	168.7	17.1	63.2	10.2	5.5	.6	190.6	16.1	1.8	1.1	8.9	706.3
	1888	28.2	65.4	116.3	154.3	15.4	59.1	10.3	5.4	.7	184.9	15.1	1.8	1.2	8.6	666.7
	1882-9	35.3	93.1	108.9	145.6	23 6	64.1	8.7	6.4	.7	191.3	15.5	1.4	1.0	7.1	702.7
Northern Districts ...	1889	5.3	50.7	11.7	187.3	7.4	75.3	2.9	2.9	.8	348.6	25.0	.6	1.1	18.0	737.6
	1888	7.6	50.2	12.6	178.7	7.6	74.0	3.4	3.0	.9	365.9	25.2	.6	1.2	17.4	748.3
	1882-9	4.9	85.5	16.6	167.4	9.0	73.2	3.2	4.5	.7	374.6	26.4	.8	1.2	19.7	787.7
The Province.	1889	71.6	34.7	76.3	167.6	7.9	61.7	16.3	4.9	1.9	208.0	12.7	1.8	1.0	9.7	676.1
	1888	73.2	32.5	79.2	163.6	7.4	61.6	19.7	5.1	2.0	202.8	13.6	1.9	1.0	10.0	673.6
	1882-9	85.6	51.9	70.9	148.1	9.9	59.2	17.1	5.7	2.1	205.3	14.2	1.7	.9	9.3	681.9

Taking the whole province it will be seen that 676.1 acres per 1,000 cleared are under the crops comprising the table, being 2.5 more than in 1888, although not up to the average for the eight years. There is a decrease, however, in the Lake Erie, Lake Huron and West Midland groups, and also in the Northern districts, compared with the previous year. For the province, an increase is observed in the ratios of spring wheat, oats, rye, pease and hay and clover, but every other crop has declined in the rate per 1,000 acres, excepting carrots, which have not changed figures. The Lake Erie group exceeds all the others in fall wheat, although its rate is not as high as in 1888. The East Midland counties lead in spring wheat, and at an increased figure. The Lake Ontario district continues the pre-eminence in barley culture, although there is a shrinkage in the rate per 1,000 acres. The St. Lawrence and Ottawa district surpasses its own record and that of every other group in the proportion of oats grown, the Georgian Bay group and the Northern districts being well after. The Georgian Bay group shows the highest rate of pease per 1,000 acres cleared. Hay and clover and potatoes find their largest ratios in the Northern districts, the St. Lawrence and Ottawa counties ranking second for both crops. The West Midland counties make the best showing in roots.

FALL WHEAT.

The fall of 1888 was a most favorable one for wheat and the winter proved to be mild, but the spring was rather trying, owing to the alternate freezing and thawing weather of March and April. The May reports were on the whole hopeful, as there had been very little winter-killing and but a small area had been plowed up. One striking feature of the reports was the strong testimony from every part of the province on the benefits resulting from drainage, under-drained fields in every case being described as away ahead of those which had been neglected in this respect. The crop did not suffer greatly from insects. The wire-worm was the commonest enemy, but it was not as bad as in other years; the Hessian fly was named but once or twice, and the weevil appeared in Northumberland, but not to a serious extent. A new comer, the grain aphis, was reported in the west, a full description of which is given on another page. The frosts of the latter part of May, and the cold and wet weather following, had the effect of setting the crop back a week or so in harvesting. The July returns were most encouraging. On uplands the crop gave promise of a magnificent return; in fact the growth was so generous that early complaints were made of lodging. Rust was the rule later on, and complaints were also numerous that the lowest kernels of the head failed to fill out. Some correspondents attributed this to the effects of the frost, while others thought it was the result of the long-continued wet weather. The yield as shown at the threshing caused surprise and disappointment, for instead of the crop going over the average, as was confidently predicted just before cutting, the yield was much below the average. The quality of the grain was also inferior as a rule, a great deal being small and shrunken. The following table gives the acreage and yield by county groups for 1889 and 1888, and the yearly average for the eight years 1882-9:

Districts.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Lake Erie	209,474	3,155,221	15.1	219,836	3,765,875	17.1	224,978	4,140,297	18.4
Lake Huron	127,201	1,811,876	14.2	133,980	2,280,705	17.0	151,059	2,898,112	19.2
Georgian Bay	81,508	1,336,949	16.4	73,080	1,430,949	19.6	81,922	1,674,819	20.4
West Midland	212,155	3,264,999	15.4	236,339	3,829,210	16.2	264,047	5,151,952	19.5
Lake Ontario	146,250	2,686,377	18.4	131,063	1,880,292	14.3	164,534	3,318,090	20.2
St. Lawrence & Ottawa	12,521	231,359	18.5	8,036	151,412	18.8	17,367	313,092	18.0
East Midland	32,329	504,664	15.6	23,304	479,113	20.6	27,883	550,380	19.7
Northern Districts	677	10,420	15.4	899	13,231	14.7	510	9,818	19.3
Totals	822,115	13,001,865	15.8	826,537	13,830,787	16.7	932,300	18,056,560	19.4

The total area of 822,115 acres in the province in 1889 is 4,422 less than in the previous year (the smallest recorded during the term of years covered by the Bureau's operations), and 110,185 acres below the average for the eight years 1882-9. The decline as compared with 1888 is confined to four of the eight groups, viz, the Lake Erie, Lake Huron, West Midland and the Northern districts, but a considerable increase is noted in the other groups. In the St Lawrence and Ottawa counties the area was more than 50 per cent. above that of the preceding year. The East Midland counties and the Northern districts are the only groups in which the acreage of fall wheat surpasses their respective averages for the eight years. Not only in acreage but also in yield fall wheat drops below its record. The average for the province is 15.8 bushels per acre, against 16.7 in 1888 and 19.4 for the eight years. The St. Lawrence and Ottawa and Lake Ontario groups give the highest average yields for the year, but neither of them touch the average of the province for the 1882-89 period. The Lake Huron counties show the poorest yield, the average being only 14.2 bushels. The Lake Ontario, St. Lawrence and Ottawa

and East Midland districts have each a larger total yield than in the previous year, but none of the groups excepting the newly settled Northern districts equal their average total yield for 1882-9.

Lake Erie Counties.—The greatest injury sustained by fall wheat in the Lake Erie counties was from the lack of snow, which enabled the frost to do its work, late-sown fields suffering considerably from winter killing, although there was very little plowed up. On well-drained soils there was but small loss from any cause, and the crop came through the winter in the most promising condition. The wire-worm was reported in Essex and Haldimand. The heavy frosts of the latter part of May did very little injury to the fall wheat in this group. Rust was reported in Kent, Elgin and Norfolk, and considerable damage was done to the growing crop by rain. The straw was unusually heavy, but in several counties, more especially in Haldimand, some of the heads failed to fill out at the base. The grain aphis appeared in several counties and swarmed over the heads of the growing wheat, but very little injury resulted. The crop did not turn out very satisfactorily in the threshing. The berry was more or less shrunken, and the yield was a varying one.

Lake Huron Counties.—In this group the crop looked promising on well-drained soils in the spring, but on low or undrained land it was in poor condition. A good deal of injury was caused in Huron and Bruce by smothering where the snow lay deep near the fences, but only an insignificant area was plowed up. The wire-worm was reported in Lambton, but there was not much harm done by it. Rain and frost in the spring did more damage in that county. In some places in Huron the wheat was badly lodged by the rain, but the crop generally was in a fair condition for cutting at harvest. Owing to the heavy rains complaints were made from Bruce of the water lying on low fields. According to the September reports the quality of the grain in Lambton was fair, but somewhat shrunken, and it was claimed that the crop had suffered from rust, mildew and the grain aphis. In Huron the berry was described as shrunken and small, and rust was general. An abundance of straw was reported in Bruce, but it was much rusted, and while the general condition of the crop was returned as fair, there were some poor fields.

Georgian Bay Counties.—With the exception of smothering by snow in places in the county of Grey, there was not much injury to fall wheat reported in the Georgian Bay district, and very little was plowed up. The wire-worm did slight damage, but no other insect was seriously complained of, although some mention was made of the Hessian fly. Late spring frosts did harm in Simcoe, but not sufficiently to render necessary the plowing up of any considerable area. As in the neighboring county, the greatest injury was from smothering by snow in spots. According to the July reports the fall wheat in this group suffered but little from frost, and to only a small extent from wet weather. It was much affected by rust, however, and when threshed the grain was found to be a rather small and shrunken sample.

West Midland Counties.—The spring found the fall wheat crop rather backward in Middlesex, and considerable damage was done by the wire-worm, especially on newly plowed sod. On summer fallowed land and well manured fields the crop was at its best. In Oxford the crop was a very fair one to the eye, except on poorly drained fields, where the fall wheat had a sickly appearance. Spring frosts were injurious, but very little harm was reported by insects. The other counties of the group had a similar experience. The straw was long, in some places quite rank and soft, and easily lodged. Rust was general, and the berry was shrunken and small. The crop was cut and housed in good condition.

Lake Ontario Counties.—The fall wheat in this group came out of the winter in very good condition, although there was more or less injury on low and undrained land by ice. No mention was made of insect pests except in Northumberland, where the weevil appeared, but only to a slight extent. The frequent rains of early summer forced the growth of the straw, which resulted in a good deal of lodging, but in other

respects the crop promised to be a superior one before cutting. The threshing, however, did not bear out the expectations. The berry was small and shrunken as a rule, and some Peel correspondents reported it as deficient in weight. There was a heavy yield of straw, but it was considerably rusted, although harvested in good order otherwise.

East Midland Counties.—There is not a great deal of fall wheat grown in this group, although the area reported is 9,025 acres greater than that of the previous year. Some winter killing was reported, but only to a slight extent. Rust was quite general, particularly on low lands. As a consequence much shrinkage in the berry was reported, and many correspondents complained of the grain being below weight. The yield per acre was very light, being only 15.6 bushels, or 5 bushels less than in 1888, and 4 bushels below the average of the eight years 1882-9.

St. Lawrence and Ottawa Counties.—The area of fall wheat is small in this group. What little was sown looked well in the spring, although reports came from Lanark that the fields had a rather patchy appearance. The July reports were favorable, but later statements showed that the great growth of straw was much rusted and that the grain was shrunken, although a few correspondents spoke of a good sample.

Northern Districts.—Fall wheat is merely an experimental crop in the northern districts, and correspondents had little or nothing to say about its condition.

The Grain Aphis.—A head of wheat infected with the grain aphis, sent to the Bureau by a correspondent, was forwarded to Prof. Panton of the Agricultural College, with a request that he should report upon it. Prof. Panton reported as follows, under date of July 5: "The insects sent belong to the family Aphidæ. The species infecting the ear is Siphonophora avenæ, or Grain Aphis. It must not be confounded with the so-called wheat weevil, which is an entirely different insect, belonging to the order Diptera. These tiny aphidæ live upon the sap of the plant, and unless in large numbers they are not likely to prove very injurious. They have many enemies, and are usually kept under by parasites. I think the wheat is too far advanced now to be much affected, for they cannot obtain sustenance much longer. Some species of this family affect plants in the green-house, but are easily kept under by smoking them from time to time. Some affect turnips, and in that case the application of a coal oil emulsion proves successful; but a remedy for grain fields I think has not yet been discovered. Some have dusted the young plants with lime, in case of an early attack, and obtained satisfactory results. Any dressing which is likely to increase the vigor of the plant will prove beneficial by enabling it to overcome the attack upon its vital forces. But where this insect has not appeared until late in the season I am inclined to think the attack will not be followed by serious results. Some of the principal characteristics of the plant lice are as follows:—They are found upon almost all parts of plants, and there is scarcely a plant which does not harbor some peculiar to itself. They are exceedingly prolific, and it often happens that a plant will be covered with them. They are usually wingless, consisting of the young and the females only. The winged forms appear only at particular seasons, usually autumn, but sometimes in the spring, and these are small males and larger females. After pairing, the latter lay eggs upon or near the parts likely to be affected, and then together with the males they die. The body of the insect is about the size of a pinhead, oval, soft, usually greenish, and furnished at the hinder extremity with two little tubes, knobs or pores, from which exude almost constantly minute drops of a sweet fluid. Their beaks are long and tubular, and are used to suck the juice from plants affected by them. The winged forms, usually seen at the close of the season, provide for a succession of the race by laying eggs in the autumn, from which arise a series of generations that give birth to living young, all of which are wingless females and all in a condition to perpetuate the species. Here you observe a strange phase in insect life,—young produced from eggs, and these producing living young several generations until the season advances, when eggs are laid again. They have many enemies, among others the little beetles known as Lady Birds and the Lace-winged Flies, and hence are pretty well kept down."

SPRING WHEAT.

In the first reports regarding spring wheat it was stated that the only injury worth mentioning had been done by water on low land. The rain and the accompanying cold weather were too much for it in such places, and the crop where so situated had a yellow and sickly look. On high and rolling land, however, spring wheat presented a fine appearance in the early part of July, and a good yield was then looked for, an expectation that was disappointed. In some quarters the straw was described as rather spongy, and there were signs of rust. Later reports verified the fears regarding an attack of rust, as the crop became badly affected by it. The Hessian fly was spoken of in the Georgian Bay district, and in a few instances mention was made of the midge, but very little actual injury was done by insects. Although the yield per acre is less than that of fall wheat, the sample is superior as a rule. An interesting comparison is afforded by the following table of acreages and yields :

Districts.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Lake Erie	5,911	85,803	14.5	5,822	102,558	17.6	11,030	165,194	15.0
Lake Huron	11,966	149,081	12.5	11,210	173,648	15.5	37,014	505,613	13.7
Georgian Bay	54,014	737,749	13.7	50,128	837,469	16.7	76,019	1,112,116	14.6
West Midland	32,206	426,573	13.2	29,478	485,812	16.5	79,488	1,160,478	14.6
Lake Ontario	122,676	1,841,946	15.0	110,580	2,203,519	19.9	162,483	2,677,886	16.5
St. Lawrence & Ottawa	106,498	1,559,737	14.6	100,624	1,804,316	17.9	116,847	1,943,630	16.6
East Midland	58,882	782,276	13.3	54,092	741,597	13.7	73,543	1,075,493	14.6
Northern Districts	6,457	114,542	17.7	5,916	104,640	17.7	8,961	163,908	18.3
Totals	398,610	5,697,707	14.3	367,850	6,453,559	17.5	565,385	8,804,318	15.6

Whilst the area of spring wheat in the province is 30,760 acres greater than in 1888, it is less than in 1887, and is 166,775 acres below the average of the province for the eight years 1882-9. Every group shows an increase of acreage compared with the previous year, but not one has reached its average for the eight years period. In the Lake Erie, Lake Huron and West Midland counties, more particularly in the second named group, the ratio of decrease is most surprising. The yield per acre is very small for the province, being 3.2 bushels less than in the preceding year, and 1.3 bushels lower than the average for the eight years 1882-9. Only the northern districts exceed the average of the province for the eight years, that group having repeated its record of the previous year of 17.7 bushels per acre. The total yield of the province, as might be expected, is much smaller than usual, being 755,852 bushels less than in 1888 and 3,106,611 less than the average for the eight years.

BARLEY.

In the reports made under date of July 1st, barley was said to have suffered more than any other cereal from frost, although even in the case of this crop the injury was not serious. It was more badly affected by the wet weather than the other grains, much of it on low, undrained lands having been "drowned out." In the county of Grey some fields were plowed up and resown to oats. On high, well-drained soils the crop was reported to be in good condition, and there was a promise of an abundance of straw. While there was a remarkable unanimity in the reports, the least favorable returns came from the Lake Huron and Georgian Bay districts. The September returns were to the effect that the yield was fair, and that the sample was generally plump and of a good color, although in the eastern part of the province, where the bulk of our merchantable barley is grown, correspondents claimed that it was more or less stained by rains during harvesting. The November bulletin summed up the state of the crop as follows : "Barley has turned out a fair crop only, and is varied in quality, although the yield is a good one.

In the southwest it is reported as a light crop of a good, bright color. In the northern and midland counties the yield was large and the sample plump, but it was badly discolored owing to the heavy dews and rains that occurred about the time of harvest. Some consider that it was allowed to stand too long in the field, on account of the wheat maturing about the same time." The acreage and yield by county groups and for the province for different periods is given in the subjoined table :

Districts.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Lake Erie	40,070	964,925	24.1	40,419	1,243,627	30.8	38,041	958,515	25.2
Lake Huron	69,908	1,734,729	24.8	69,858	2,026,067	29.0	61,339	1,647,297	26 9
Georgian Bay	60,443	1,535,281	25.4	63,140	1,401,708	22.2	54,756	1,388,209	25.4
West Midland	156,880	4,533,985	28.9	158,314	4,832,267	30.5	132,991	3,788,903	28.5
Lake Ontario	352,678	9,760,205	27.7	367,101	9,647,764	26.3	299,530	7,933,071	26.5
St. Lawrence & Ottawa	101,545	2,461,962	24.2	98,958	2,171,491	21.9	97,836	2,382,379	24.4
East Midland	92,272	2,361,746	25.6	96,162	2,009,730	20.9	86,008	2,079,084	24.2
Northern Districts	1,490	33,555	22.5	1,480	33,915	22.9	1,744	41,472	23.8
Totals	875,286	23,386,388	26.7	895,432	23,366,569	26.1	772,245	20,218,930	26.2

The crop makes a most creditable showing so far as yield is concerned. The total yield of the province is 19,819 bushels more than in 1888, and exceeds the average for the eight years 1882-9 by 3,167,458 bushels. Compared with the previous year this total increase is due entirely to the improved yield, but both acreage and yield are in favor of 1889 as compared with the average for the eight years. There is only a slight difference in the acreage of any of the groups compared with the previous year, but the net result is a decrease of 20,146 acres. The average yield per acre for the province is 26.7 bushels, being .6 more than in the previous year and half a bushel more than the average for the eight years. The average of the province for the year is exceeded in the West Midland and Lake Ontario groups, where most of the barley of the province is grown, and with the exception of the Northern districts every other group gives over 24 bushels per acre. The West Midland, Lake Ontario and East Midland groups surpass and the Georgian Bay counties equal their respective average yields for the eight years.

The Barley Market.—The ruling quotations for barley in Ontario last year were lower than for any year of the present decade, and in many quarters a fear is entertained that the United States market for this cereal has ceased to be remunerative for our farmers. For the last eight years the average of the provincial quotations for the second half of the year has ranged from 65 cents in 1882 to 44 cents in 1889, and the average for the eight years has been 55½ cents. Yet although the price fell to a very low figure for the crop of 1889, it does not appear that the quantity exported to the United States has fallen off to any serious extent. The following statement, furnished by the chief of the Bureau of Statistics at Washington, shows the quantity and value of imports of barley into the United States for the six months ending December 31, for the years named*.

Year.	Quantity.	Value.
	bushels.	$
1887	7,689,091	5,796,901
1888	6,396,158	4,728,213
1889	6,146,494	3,263,283

*The imports of 1888 and 1889 are of Canadian barley only, while those of 1887 are from all countries. But practically the whole amount is received from Canada, as the statistics for the eight years 1882-9 show that only one-half of one per cent. of the total imports came from other countries.

The imports for the second six months of 1888 are thus seen to be 1,292,933 bushels less than for the corresponding period of 1887, and the entered value less by $1,068,688, the average value per bushel being less by 1½ cents. But while for the six months of 1889 the imports were less than in 1887 by 1,542,597 bushels, the entered value was less by $2,533,618, and the average value per bushel less by nearly 22½ cents.

Before referring to the probable cause of the fall in price of barley, it is desirable to see the extent to which Canadian farming interests may be affected by the sudden change, assuming it to be permanent. The following table shows the quantity and value of imports of barley and barley malt from Canada into the United States for the eight fiscal years ending June 30, from 1882 to 1889, as given in the commercial tables of the United States :

Year.	Barley.		Barley malt.	
	bushels.	value.	bushels.	value.
1882	12,164,393	$10,849,425	1,128,732	$1,098,867
1883	10,021,116	7,707,915	1,354,836	1,122,336
1884	8,593,902	5,919,965	155,338	111,926
1885	9,984,870	6,520,827	378,806	267,796
1886	10,194,107	7,175,397	319,005	233,751
1887	10,351,895	6,170,660	206,203	149,444
1888	10,445,751	7,812,814	200,915	151,788
1889	11,365,881	7,721,475	136,256	100,314
Totals	83,121,915	59,878,478	3,880,091	3,236,222

The average values of grain and malt imports for the eight years was $7,969,821, which is very close to the values for 1888 and 1889, but $4,008,336 less than the value for 1882. The total imports from all countries for the same period of eight years was 83,568,622 bushels of barley valued at $60,599,863, and 3,928,779 bushels of barley malt valued at $3,281,726, so that of total imports of barley and barley malt imported by the United States in those years valued at $63,481,589, Canada supplied to the value of $63,114,700, or an average of $7,889,337 yearly.

The following table presents the averages of market quotations of barley per bushe for the province of Ontario and of declared values as entered in the United States, with the difference between each for the eight years 1882-9.*

Year.	Ontario quotations.	U.S. declared value.	Difference.
	per bush.	per bush.	per bush.
1882	$0 65	$0 89.2	$0 24.2
1883	0 57	0 76.9	0 19.9
1884	0 53.6	0 69.1	0 15.5
1885	0 55.2	0 71.8	0 16.6
1886	0 51.3	0 70.4	0 19.1
1887	0 56.7	0 59.6	0 2.9
1888	0 60.1	0 76.7	0 16.6
1889	0 44	0 67.9	0 23.9
Averages	0 55.5	0 72	0 16.5

*There is no constant uniformity in the relation of Ontario quotations and United States declared entry values, but obviously there is a mistake in the United States entry for 1887, which is only 2.9 cents per bushel above the average of Ontario market quotations for the same year against an average of 16.5 cents for the eight years.

The average of the quotations for those eight years has been very irregular, responding no doubt to the conditions of supply, demand and quality. The lowest prices were touched in the years 1884, 1886 and 1889, and the highest were reached in 1882 and 1888; and although there is a difference of 21 cents per bushel between the quotations of the first and last years, that fact of itself would not justify the conclusion that the price had fallen permanently, more especially as it appears that the difference in the quotations of 1882 and 1888 is less than 5 cents per bushel. There is a strongly grounded belief, however, that the recent fall in price is due to the use of cheap substitutes for barley malt in the production of beer, and if it is proved that these substitutes answer the purpose satisfactorily the depreciation of Canadian barley is likely to be permanent. In answer to enquiries made of a number of the leading barley dealers and commission merchants of New York state respecting the reduced imports of Ontario barley of the crop of 1889 and the drop in prices, the following statements have been received in reply:

W. H. Irwin, 124 Produce Exchange, New York:

While the manufacture and consumption of beer have increased steadily at the rate of ten per cent. per annum, and is now 27,000,000 barrels the consumption of malt has steadily increased owing to the use of substitutes. Formerly brewers used 2½ bushels of malt to a barrel of beer, and now only 1 to 1½ bushels; in other words they are using 33⅓ to 50 per cent. of substitutes. This accounts for the falling off in the demand for Canadian or better qualities of malt, as with the use of corn and other substitutes they can get the required color and consequently can use a cheap and low grade of malt. In most cases it is a question of price and not of quality.

Evan Thomas, Produce Exchange, New York:

All cereals are very low, and there is no reason why your barley should not be likewise. Most of it is dark this year, and many brewers who formerly used Canada malt have proved to their satisfaction that American malt will do as well, especially for lager; and the consumption of lager is increasing each year at the expense of ale and spirits, and will, I think, so continue.

S. P. Knapp, 19 Whitehall street, New York:

The only cause I know of is the large quantity of corn that is used for brewing purposes. As near as I can ascertain there is from 33⅓ to 60 per cent. cornmeal used as a substitute for malt, and the brewers say the yield is larger and costs considerably less. The decrease in consumption of New York State two-rowed barley this season has been very large; I should say one-fourth to one-third less than in previous years. We are expecting our Government to look into this substitute business very soon.

Franklin Elson, 435 Produce Exchange, New York:

You make enquiry as to the cause of the low prices of barley and the falling off in the demand for Canadian barley in the United States. In reply I have to say that the principal cause for the condition of things suggested by your inquiry is the extensive and increasing use of substitutes for barley malt in making ale and beer in the United States. The very low price of corn has greatly stimulated the use of it as a substitute for malt. I am informed, and I believe, that whereas malt was used almost exclusively a few years ago by brewers in the United States, there is now used from 30 to 50 per cent. of cornmeal. Another reason is that the barley crop of the west, especially in Minnesota, is of much greater value in quality as well as quantity than it was five years back, and the East is therefore applied very largely from that source with very satisfactory malt, as well as with the raw barley. There are other minor reasons which might be mentioned, but they would be, perhaps, rather results of the reasons I have already given than causes of any value in themselves.

W. H. Story & Co., Commission Merchants, New York:

One of the causes of the falling off in the demand for Canada barley is that brewers are using a much larger percentage of substitutes in the manufacture of beer than ever before. Another cause is the low price of State and Western barley and malt. Barley grown in Iowa and Wisconsin of equal color and weight has sold in this market during the entire malting season at an average of ten cents per bushel below Canadian. We have sold since January 1st 100,000 bushels of State barley at 45c. to 48c., while Canadian has been selling at say 58c. to 60c. Of course your product has the advantage in color, but the State barley makes a malt yielding fully as much extract as your barley. We think the large falling off in the demand for Canadian barley is summed up in a few words. Substitutes and cheap Western barley. We know of one malster who formerly used Canadian entirely, who has this year malted 300,000 bushels of barley, only 75,000 of which has come across the line. It seems to us that the proposed increase in the duty, if the McKinley bill passes, will close up our trade in Canada barley. It has certainly been poor enough for the past three years, and it can stand no increased burden.

These statements of well known produce merchants appear to be conclusive as to the fact that cheaper substances are taking the place of barley malt in the production of beer. It may be premature, however, to express a positive opinion on the ultimate effect of the use of substitutes upon the barley trade; some who have studied the question care-

fully maintain that sales and prices will continue as heretofore, subject to the usual fluctuations of trade. But in other industries there are numerous instances in which good or cheap materials have been substituted for poor or dear ones. Steel, for instance, has to a very large extent taken the place of iron; some of the aniline dyes have taken the place of vegetable dyes, and shoddy has largely taken the place of wool fibre. Brewers also will naturally seek to procure the cheapest raw materials for the production of beer, so long as the quality of the beverage is not greatly deteriorated in the opinion of their patrons.

The market of Great Britain is the largest in the world for barley, the average annual imports for the twelve years 1877-88 having been about 28,300,000 bushels, but it is chiefly for the two-rowed variety. The following table gives the imports from foreign countries and British possessions for the seven years 1882-8:

Countries whence exported.	1882	1883	1884	1885	1886	1887	1888
	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.
Algeria	26,109	52,876	343,859	819,723	336,198	249,296	66,413
Austria	132,135	367,705	313,361	744,040	481,287	366,500	655,903
Bulgaria	97,499	79,730	43,617	124,496	37,314	.....	29,285
Canada	.....	36,901	409	8,870	344	2,816	.....
Chili	6,851	52,859	291,777	152,583	165,338	73,081	326,792
Denmark	1,062,914	750,034	226,874	612,119	973,306	822,305	1,005,402
Egypt	48,467	95,945	225,340	62,516	.....	44,493	64,771
France	909,685	1,475,713	1,281,262	1,424,600	1,033,323	624,552	410,014
Germany	2,175,536	1,794,914	724,532	609,142	1,205,750	931,951	2,427,669
Holland	78,846	7,049	118,087	57,592	67,633	55,525	39,727
India, British	.....	.....	.....	.....	*201,060	69,211	539
New Zealand	52,899	1,737	4,606	12,313	12,010	10,844	.....
Roumania	5,719,985	4,460,601	1,401,211	2,377,519	2,346,287	2,309,276	3,207,205
Russia:							
Northern ports.	4,097,344	5,517,049	4,965,593	6,524,542	139,393	186,843	461,712
Southern ports.					5,401,648	7,276,790	11,068,691
Sweden	556,685	397,502	176,088	169,648	540,256	602,236	518,903
Turkey	513,344	1,183,051	2,403,631	1,288,738	648,793	175,884	906,406
United States:							
Atlantic ports.	47,578	118,756	226,659	135,913	42,687	18,804	20
Pacific ports.					7,122	350,365	52,400
Other Countries	14,185	88,906	127,118	241,806	73,888	68,794	63,498
Totals	15,540,112	16,461,328	12,953,015	15,366,160	13,713,637	14,239,566	21,305,350

The total British imports of barley in those seven years was 219,158,336 bushels, being an average of 31,308,334 bushels yearly. Of this amount Russia, Roumania, Germany, France and Denmark supplied 179,884,772 bushels, or 25,697,824 bushels per annum, the average yearly imports from each of these counties being as follows: Russia, 13,039,887 bushels; Roumania, 6,234,881; Germany, 2,819,598; France, 2,045,471; and Denmark, 1,557,987. The Russian supply has increased almost steadily from 8,194,685 bushels in 1882 to 23,060,806 bushels in 1888. The total Canadian supply for the seven years has been only 98,662 bushels, and three-fourths of this quantity was received in a single year, 1883. There is apparently, therefore, no likelihood of our Canadian barley growing in favor for British consumption, unless a quality can be produced which will suit the requirements of that market. The standard weight of our

*British India was included with "Other Countries" prior to 1886.

six-rowed barley is only 48 lb. per bushel, whereas the two-rowed variety, with a standard of 56 lb. per bushel, is the one in chief demand by British malsters; and it remains to be proven whether in our comparatively dry and quick-maturing season the two-rowed barley can be grown to reach the British standard. The market is a large and important one, and should our farmers succeed in growing a grain to suit it the loss of the American market might not be seriously felt. But there is no assurance that the substitutes now so largely used by American brewers might not find favor with British brewers also, and in that case a change from the six-rowed to the two-rowed variety might result in no advantage to the Ontario farmer.

OATS.

This crop stood the weather better than any other grain, although it was considerably injured on heavy undrained soils. Early in the season the prospects were good for a large yield, and there was an extraordinary growth of straw. In the July returns there were reports of injury by wire-worm in Middlesex, Perth and Simcoe, and also in Victoria, Peterborough and Muskoka, but the general tenor of the reports was cheerful. According to the September returns the crop was rank in straw, but it was housed in good condition. The November reports confirmed fears expressed earlier as to the grain being light in weight, and also repeated the statement that the crop had suffered extensively from rust. Taken all together, however, oats may be regarded as one of the best grain crops of the year. The yield and acreage by county groups and for the province for 1889, 1888 and the average of the eight years 1882-9 is given below:

Districts.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Lake Erie	184,964	5,916,841	32.0	183,079	7,900,155	43.2	163,272	6,058,362	37.1
Lake Huron	217,777	6,636,698	30.5	210,927	7,771,246	36.8	175,437	6,259,380	35.7
Georgian Bay	192,786	6,293,753	32.6	182,853	5,316,724	29.1	150,480	4,956,686	32.9
West Midland	402,619	14,992,059	37.2	391,766	15,931,550	40.7	331,742	12,773,160	38.5
Lake Ontario	324,884	11,870,318	36.5	315,837	12,348,550	39.1	280,997	10,409,257	37.0
St. Lawrence & Ottawa	437,487	13,171,243	30.1	416,806	12,297,713	29.5	379,180	12,406,998	32.7
East Midland	139,070	4,730,060	34.0	127,531	3,288,305	25.8	114,983	3,620,836	31.5
Northern Districts	23,857	735,329	30 8	21,069	612,668	29.1	17,540	556,356	31.7
Totals	1,923,444	64,346,301	33.5	1,849,868	65,466,911	35.4	1,613,631	57,041,035	35.3

The area in oats for the whole province is 1,923,444 acres, being 73,576 more than in 1888 and 309,813 more than the average for the eight years 1882-9. Compared with the previous year an increase in acreage is noticeable in every group. The yield per acre for the province is only 33.5 bushels, being 1.9 bushels less than in 1888, and 1.8 bushels lower than the average yield for the eight years. The best yields for the year are observed in the West Midland and Lake Ontario counties, the average for these groups being 37.2 and 36.5 bushels respectively, and the poorest returns are given in the St. Lawrence and Ottawa and Lake Huron groups and the Northern districts. Notwithstanding the increase of acreage all around, only four of the groups exceed their total yield of the previous year, viz., the Georgian Bay, St. Lawrence and Ottawa and the East Midland counties and the Northern districts. The total yield for the province is 1,120,610 bushels less than in 1888, but 7,305,266 bushels more than the average for the eight years 1882-9.

RYE.

Winter rye is an important crop in Northumberland, Durham, Prince Edward and a few other counties, and the May reports regarding its condition were very encouraging. There was but little mention made of rye in the July reports, as the total area given to the crop, both fall and spring sown, is limited. The rain did very little hurt to the crop. Frost did injury in Haldimand, and an insect in Lennox threatened harm, but the returns generally were hopeful. The September and November reports concerning rye were each favorable. The heads were described as well filled, and the straw as long and of good quality. The table following gives the acreage and yield by districts :

Districts.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Lake Erie	13,142	161,139	12.3	13,694	241,768	17.7	11,763	183,692	15.6
Lake Huron	981	17,758	18.1	1,008	20,470	20.3	885	15,378	17.4
Georgian Bay	2,903	52,181	18.0	2,826	47,851	16.9	2,807	51,449	18.3
West Midland	5,449	78,643	14.4	5,597	107,691	19.2	5,043	82,713	16.4
Lake Ontario	30,548	458,854	15.0	28,380	412,476	14.5	33,278	495,146	14.9
St. Lawrence & Ottawa	22,072	425,818	19.3	18,986	270,337	14.2	34,805	628,506	18.1
East Midland	14,074	220,020	15.6	12,697	180,530	14.2	18,659	291,666	15.6
Northern Districts	937	17,266	18.4	899	14,179	15.8	939	18,217	19.4
Totals	90,106	1,431,679	15.9	84,087	1,295,302	15.4	108,179	1,766,767	16.3

While the area for the province is 6,019 acres more than in 1888, it falls 18,073 acres below that of the average for the eight years 1882-9. A decrease in the acreage of this crop, compared with the previous year, is observed in the Lake Erie, Lake Huron and West Midland groups. The average yield per acre for the province is .5 bushel more than in 1888, but is .4 bushel less than the average for the eight years. The yield in the St. Lawrence and Ottawa group is very high, averaging 19.3 bushels to the acre, and the Northern districts, Lake Huron and Georgian Bay groups give 18 bushels or over ; but in the Lake Erie counties the average yield is only 12.3 bushels per acre. The total yield for the province is 136,377 bushels more than in 1888, but is less by 335,088 than the average for the eight years.

PEASE.

Frost injured pease slightly in some western counties, but more serious damage was done by flooding on low spots and on undrained level fields. In many places the crop was bleached from excessive rain, and in some cases the fields were "drowned out" and ruined. On high and well-drained lands, however, the crop presented a magnificent appearance when correspondents wrote in the beginning of July. When the September returns were received it was found that the reports varied considerably, according to the situation and nature of the land. On high land or well drained fields the crop was a splendid one, but on low fields, as already stated, it had been greatly injured by the heavy rains of the early summer months, and the pea was generally shrivelled. The most unfavorable accounts were received from the eastern portion of the province, where the rains were more injurious than in the west. The bug was again slightly troublesome in the

Lake Erie counties. The following table gives the acreage and yield by county groups for 1888 and 1889, together with the average acreage and yield for the eight years 1882-9:

Districts.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Lake Erie	71,837	1,243,765	17.3	70,492	1,681,649	23.9	58,620	1,119,057	19.1
Lake Huron	88,652	1,629,066	18 4	87,997	1,961,331	22.3	77,743	1,705,786	21.9
Georgian Bay	86,065	1,889,918	22.0	83,191	1,430,886	17.2	77,014	1,643,287	21.3
West Midland	154,671	2,697,323	17.4	152,082	3,818,156	25.1	131,445	2,840,518	21.6
Lake Ontario	162,758	3,029,343	18.6	164,308	3,279,080	20.0	147,536	2,929,785	19.9
St. Lawrence & Ottawa.	82,426	1,677,185	20.3	80,945	1,299,102	16.0	93,868	1,813,391	19.3
East Midland	52,067	1,122,888	21.6	48,909	600,731	12.3	50,600	942,540	18.6
Northern Districts	9,592	219,749	22.9	8,729	198,928	22.8	7,669	177,361	23.1
Totals	708,068	13,509,237	19.1	696,653	14,269,863	20.5	644,495	13,171,725	20.4

There is an increase in the acreage and a decrease in the yield of pease in the province compared with the previous year, the net result being a falling off of 760,626 bushels in the total yield. An increase in the acreage is noted in every district except the Lake Ontario group compared with 1888, and the St. Lawrence and Ottawa group is the only one falling behind its average acreage for the eight years 1882-9. The average yield per acre for the province is 1.4 bushels less than in 1888, and 1.3 lower than the average for the eight years term. The Northern districts and the Georgian Bay and East Midland groups exceed the average yield of the province for the eight years, but the Lake Erie counties average only 17.3 bushels per acre, and the West Midland district, with the second largest area in pease, gives but 17.4 bushels per acre. Although in 1888 the Lake Ontario group had the largest acreage in pease, the greatest total yield was credited to the West Midland group, which had a very high yield per acre. This year, however, both the largest area and largest total yield are seen in the Lake Ontario district, although that yield falls below its own record in the previous year.

INDIAN CORN.

The accounts concerning the condition of corn received up to the 1st of July were described as monotonously doleful. The frost was injurious to the tender blade, while the rain rotted much of the seed. Some correspondents reported a total failure and all the rest a partial failure on account of frost, rain and cold weather. Cultivating was almost an impossibility except on high land. The September bulletin referred to corn as still unpromising. Owing to the seed rotting in the ground some of the fields had to be replanted once, twice and even three times. As a consequence the crop got a very late start, and being overtaken by the drouth in August it had a struggle for life. The November returns, however, showed that the corn which survived the heavy rains early in the season was harvested in very fair condition, but it could be considered only a little more than a half crop in the southwest, where it is chiefly grown. In the eastern part of the province it turned out a good crop, greatly surpassing the expectations of early summer. The following table gives the acreage and yield by county groups and for the province:

Districts.	1889.			1888.			Yearly average for the seven years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Lake Erie	85,284	3,899,376	45.7	108,279	9,404,099	86.9	92,981	6,491,092	69.8
Lake Huron	9,877	402,988	40.8	11,975	949,259	79.3	9,294	569,452	61.3
Georgian Bay	2,003	96,414	48.1	1,913	119,325	62.4	1,281	67,306	52.5
West Midland	27,657	1,338,581	48.4	33,684	2,585,369	76.8	26,557	1,730,138	65.1
Lake Ontario	31,842	1,733,524	54.4	35,297	2,529,582	71.7	27,935	1,652,722	59.2
St. Lawrence & Ottawa.	21,679	1,326,955	61.2	22,948	1,337,332	58.3	17,828	994,912	55.8
East Midland	8,404	433,625	51.6	8,480	497,165	58.6	6,611	337,632	51.1
Northern Districts	370	16,736	45.2	395	14,649	37.1	316	12,887	40.8
Totals	187,116	9,248,199	49.4	222,971	17,436,780	78.2	182,803	11,856,141	64.9

The area devoted to corn shrank greatly in 1889, being 35,855 acres less than in the previous year, although slightly above the average for the eight years 1882-9. The greatest falling off in acreage is noticeable in the Lake Erie counties, where about half the corn of the province is usually grown. The average yield per acre for the province for the eight years was 64.9 bushels. This was greatly exceeded in 1888, when 78.2 bushels per acre were recorded, but it falls to the very low average of 49.4 bushels in 1889. Not one district touches the average of the province for the eight years, and the Lake Huron group gives only 40.8 bushels per acre. Excepting the Northern districts, where the crop is merely a nominal one, none of the groups reach their own total yield for the previous year. In the Lake Erie counties alone the falling off compared with 1888 amounts to 5,504,723 bushels. The total yield of the province is but little more than half of that of the preceding year, and is 2,607,942 bushels below the average for the eight years.

BUCKWHEAT.

The sowing of buckwheat was delayed in many sections of the province owing to the frequent rains and generally backward state of the weather up to July. Some correspondents claim that the crop was injured in the blossoming stage by the intense heat of the sun. In the eastern portion of the province buckwheat matured in good condition, very favorable reports being received concerning both the yield and sample. The acreage and yield by county groups and for the province for 1888, 1889 and the averages for the eight years 1882-9 are given in the following table:

Districts.	1889.			1888.			Yearly average for the seven years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Lake Erie	8,773	164,100	18.7	9,243	190,411	20.6	9,717	194,719	20.0
Lake Huron	720	13,008	18.1	739	11,107	15.0	946	18,598	19.7
Georgian Bay	464	7,581	16.3	487	7,685	15.8	636	10,800	17.0
West Midland	1,743	32,473	18.6	1,759	33,395	19.0	2,227	43,426	19.5
Lake Ontario	17,614	344,931	19.6	18,037	445,646	24.7	15,582	340,709	21.9
St. Lawrence & Ottawa.	22,149	596,859	26.9	22,471	434,452	19.3	26,450	624,456	23.6
East Midland	4,569	104,831	22.9	4,440	93,595	21.1	4,941	110,093	22.3
Northern Districts	366	8,795	24.0	352	5,992	17.0	451	11,076	25.7
Totals	56,398	1,272,578	22.6	57,528	1,222,283	21.2	60,930	1,353,877	22.2

The number of acres of buckwheat in the province in 1889 falls 1,130 below the area of the preceding year and is 4,532 less than the average for the eight years 1882-9. The East Midland counties and the Northern districts are the only groups showing a larger acreage than in 1888, and the Lake Ontario is the only group surpassing its own average for the eight years. The average yield per acre of the province is 1.4 bushels ahead of that of the preceding year and .4 more than the average for the eight years. The total yield of the province is greater than in 1888, owing to the increased yield per acre, but is less than the yearly average for the eight years 1882-9 on account of the decrease in the acreage. The best average yield per acre, 26.9 bushels, is observed in the St. Lawrence and Ottawa district, where the largest acreage is also found, and the smallest average yield is to be seen in the Georgian Bay group, where only 16.3 bushels per acre were realized.

BEANS.

Early beans were killed by frost, and the crop was greatly injured by rains. Owing to the wet and backward weather planting had to be delayed in some places until it was almost too late for a crop. A considerable area had to be replanted in Kent, the great bean-producing county of the province. Many correspondents mentioned rotting of the seed from the excessive rain. A little later on the crop was arrested in its growth by drouth, but although the yield was much below the average, the quality was said to be very good. The acreage and yield by groups for 1888 and 1889, together with the average for the eight years 1882-9, are given in the following table :

Districts.	1889.			1888.			Yearly average for the seven years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Lake Erie.....	15,069	232,362	15.4	15,600	376,417	24.1	14,550	281,689	19.4
Lake Huron.....	473	8,662	18.3	478	13,098	27.4	556	11,855	21.3
Georgian Bay	215	4,300	20.0	230	3,436	14.9	212	3,855	18.2
West Midland.....	695	13,297	19.1	692	17,481	25.3	1,093	22,804	20.9
Lake Ontario.....	1,741	32,632	18.7	1,882	43,576	23.2	2,020	43,976	21.8
St. Lawrence & Ottawa.	2,999	70,656	23.6	3,129	66,860	21.4	3,142	76,321	24.3
East Midland	533	7,914	14.8	580	11,862	20.5	528	9,927	18.8
Northern Districts....	105	2,070	19.7	109	1,796	16.5	69	1,428	20.7
Totals	21,830	371,893	17.0	22,700	534,526	23.5	22,170	451,855	20.4

There is a falling off in the acreage of beans compared with 1888 and the average for the eight years 1882-9. The West Midland district is the only group showing an increased area compared with its record in the previous year. The average yield per acre for the province is only 17 bushels, being 3.4 bushels lower than the average of the province for the eight years period and 6.5 bushels per acre less than the generous yield of 1888. The St. Lawrence and Ottawa counties give 23.6 bushels per acre, and one or two other groups closely approach the average for the eight years, but in the Lake Erie group, where over 69 per cent. of the entire acreage of the province is found, the average yield per acre is only 15.4 bushels, the decrease in the total yield in that group alone being 144,055 bushels compared with the previous year. The total yield for the province is 162,633 bushels less than in 1888, and is 79,962 below the average for the eight years 1882-9.

HAY AND CLOVER.

The spring reports concerning clover fields were very unfavorable. There was a very poor "catch" in the previous year owing to the drouth, and what little had germinated stood a poor chance against the long-continued dry weather. The early spring was also against the plant, which was reported as being greatly injured by heaving in different sections of the province. Still there were a number of returns describing the condition of the crop as excellent. In the counties of Kent, Norfolk, Wellington and Waterloo especially clover passed through the winter and early spring with splendid prospects. Throughout the returns received in the early part of the season there was an absence of complaints about injury from insects to this crop, although later a mention was made of the midge. In the bulletin of July 1st it was said that the frosts of the last week of May had given a decided set-back to the crop, both timothy and clover having been nipped in several counties, although timely rains saved the fields. But there was too much rain even for hay, and some correspondents reported clover as rotting at the roots from excessive moisture. Clover was in a more prosperous condition than timothy, and while old meadows were rather poor, new ones were in first-class condition where not injured by too much water. The cold, wet weather delayed mowing a week or two later than usual. According to the July returns no part of the province seemed to be specially favored, as the returns were of a very even character. The following table shows the acreage and yield by county groups for 1888, 1889 and the average of the eight years 1882-9:

Districts.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Tons.	Tons per acre.	Acres.	Tons.	Tons per acre.	Acres.	Tons.	Tons per acre.
Lake Erie	296,596	508,450	1.71	270,972	263,322	0.97	272,464	387,696	1.42
Lake Huron	257,147	399,795	1.55	243,207	243,616	1.00	228,512	310,936	1.36
Georgian Bay	211,275	309,338	1.46	203,618	172,659	0.85	189,210	235,955	1.25
West Midland	419,362	681,957	1.63	406,550	425,435	1.05	405,100	599,917	1.48
Lake Ontario	404,637	649,232	1.60	387,871	264,906	0.68	404,767	553,707	1.37
St. Lawrence & Ottawa	595,669	918,604	1.54	584,413	498,935	0.85	546,171	728,568	1.33
East Midland	157,131	206,714	1.32	152,869	98,468	0.64	151,151	178,378	1.18
Northern Districts	44,406	54,223	1.22	43,138	41,676	0.97	39,247	45,920	1.17
Totals	2,386,223	3,728,313	1.56	2,292,638	2,009,017	0.88	2,236,622	3,041,077	1.36

In this crop there is an increase in yield per acre to be observed in every district compared either with their respective records in 1888 or their averages for the eight years 1882-9, and the same may be said of the area, except in the case of the Lake Ontario group where the acreage falls slightly below that of the eight years period. There is an increase of 93,585 acres in the area of the province over that of the preceding year, but the average yield for 1888 was so low, being only .88 ton, that the total yield for 1889 is 1,719,276 tons more than in the previous year, while it exceeds the average total yield of the province for the eight years by 687,236 tons. The Lake Erie, West Midland and Lake Ontario groups exceed the average yield of the province for the year, and the poorest yields are returned by the Northern districts and the East Midland groups.

Clover Seed.—The returns were somewhat conflicting with regard to seed clover. Some reported the yield as particularly good, while others declared it to be almost a complete failure. Many farmers did not reserve their fields for seed, but turned them to pasture on account of the drouth. The reports were generally favorable from Norfolk and Middlesex and several other southwestern counties, but there the midge was again troublesome. Frost and drouth also combined against this crop, as is more fully detailed

in the paragraph relating to hay and clover. The general opinion respecting clover was that while it was light on the ground, the heads were well filled and of good quality. The total yield was small.

FIELD ROOTS.

None of the root crops have made anything like an average showing. The conditions at seed time were greatly against them, the season being very wet and backward, and the poor start handicapped them all the way through. The most encouraging statement made regarding all the root crops was that they were secured under favorable conditions and had been safely housed for the winter.

POTATOES.—Potatoes suffered greatly in the early part of the year. Early planted fields were cut down by frost and much of the seed rotted, which necessitated a good deal of replanting. The crop was very much injured in low places. The September bulletin stated that growth had been arrested in August by the drouth, and except in some of the northwestern counties, which were more favored with rain than elsewhere, the tubers were "small and few in a hill" throughout the western part of the province. Dry rot was reported from two places in Oxford. In the counties along the St. Lawrence and Ottawa rivers the wet season continued down to the middle of August, and the rot did serious injury. The November reports were to the effect that potatoes, though small, had turned out to be of very good quality on high light soils, but on heavy clay lands the crop was generally a failure. Rot was so bad in the eastern part of the province that some fields were found to be almost destroyed by it. The acreage and yield are given by county groups in the following table:

Districts	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Lake Erie	13,295	836,971	63.0	15,356	2,314,015	150.7	16,280	1,768,078	108.6
Lake Huron	11,422	1,048,661	91.8	12,915	1,879,303	145.5	12,791	1,468,087	114.8
Georgian Bay	12,974	1,397,613	107.7	13,677	2,162,204	158.1	13,622	1,706,924	125.3
West Midland	23,228	1,958,035	84.3	26,341	4,264,170	161.9	26,612	3,102,129	116.6
Lake Ontario	30,545	2,928,942	95.9	32,686	5,082,761	155.5	31,404	3,515,844	112.0
St. Lawrence & Ottawa	37,938	3,870,337	102.0	37,474	4,783,693	127.7	38,787	4,853,440	125.1
East Midland	13,225	1,781,113	134.7	12,501	1,438,438	115.1	12,260	1,519,729	124.0
Northern Districts	3,185	533,857	167.6	2,965	349,023	117.7	2,766	414,497	149.9
Totals	145,812	14,355,529	98 5	153,915	22,273,607	144.7	154,522	18,348,728	118.7

The area of the potato crop is 8,103 acres less than that of the preceding year, and 8,710 acres less than the average for the eight years 1882-9. An increase in acreage is noted in the St. Lawrence and Ottawa and East Midland groups and in the Northern districts, compared with the previous year. The average yield per acre for the province is 20.2 bushels below that of the eight years, and is 46.2 bushels per acre less than in 1888. The consequence is that the total yield of the province is 3,993,199 bushels less than the average for the eight years period, and 7,918,078 bushels less than in 1888. The East Midland group and the Northern districts record an increased total yield, but in the West Midland counties the total yield is only 1,958,035 bushels as against 4,264,170 bushels in 1888, and an even greater proportionate decrease is observed in the Lake Erie district. The yield per acre in the Northern districts is the best of any group in the two years.

MANGEL-WURZELS.—Correspondents reported in July that it was difficult to sow mangels at the proper time owing to frequent rains, and that consequently the crop got a backward start. There was a slow growth until the beginning of September, when the crop picked up to a considerable extent, but not sufficiently to make anything like an

average yield. It was reported in November that the roots were well housed. The following table gives the acreage and yield by county groups for 1888, 1889 and the average for the eight years 1882-9 :

Districts.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Lake Erie	1,666	491,490	295	1,764	797,932	452	1,287	490,732	381
Lake Huron	2,638	945,326	358	2,644	1,133,801	429	2,273	971,266	427
Georgian Bay	770	321,398	417	788	280,984	357	979	409,496	418
West Midland	7,223	2,200,121	305	7,342	3,681,673	502	5,889	2,616,213	444
Lake Ontario	5,594	2,036,926	364	5,754	2,947,341	512	5,075	2,209,482	435
St. Lawrence & Ottawa	1,735	619,419	357	1,610	518,005	322	1,624	596,859	368
East Midland	1,513	590,423	390	1,485	646,523	435	1,108	435,132	393
Northern Districts	72	18,375	255	72	14,400	200	84	21,694	258
Totals	21,211	7,223,478	341	21,459	10,020,659	467	18,319	7,750,874	423

The total acreage is slightly below that of the previous year, although an increase is noted in the St. Lawrence and Ottawa and East Midland groups. The yield per acre for the province is 126 bushels less than in 1888 and 82 bushels less than the average for the eight years 1882-9, a fact which accounts for a decrease of 2,797,181 bushels in the total yield compared with the previous year and of 527,396 bushels compared with the average of the province for the eight years. In the West Midland group alone the total yield is 1,481,552 bushels below that of 1888. An increased total yield is observed in the Georgian Bay and St. Lawrence and Ottawa groups and in the Northern districts. The largest average yield per acre for the year is seen in the Georgian Bay group, yet the figures do not reach the average of the province for the eight years.

Carrots.—Carrots were sown later than usual on account of the continued rains, but in the earlier stages of growth there were good reports sent regarding the crop. The September returns were also favorable. Although not a full yield, the November bulletin described carrots as being in a better condition than the other roots. The following table gives the acreage and yield by county groups for various periods :

Districts.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Lake Erie	882	204,078	231	932	295,100	317	684	188,430	275
Lake Huron	1,047	286,000	273	1,083	359,847	332	997	348,945	350
Georgian Bay	1,015	347,028	342	1,042	324,408	311	1,128	409,800	363
West Midland	2,355	664,267	282	2,437	857,836	352	2,235	817,007	366
Lake Ontario	3,157	1,055,037	334	3,224	1,281,328	397	2,853	1,063,612	373
St. Lawrence & Ottawa	1,723	496,109	288	1,702	418,532	246	1,472	447,399	304
East Midland	935	331,296	354	961	331,553	345	801	262,087	327
Northern Districts	147	48,144	328	143	29,980	210	130	33,834	260
Totals	11,261	3,431,959	305	11,524	3,898,584	338	10,300	3,571,114	347

A decrease of 263 acres is noticed in the total area of carrots compared with the preceding year, although there are 961 acres more than the average for the eight years. The only groups

showing an increased acreage are the St. Lawrence and Ottawa counties and the Northern districts. The average yield per acre of the province is 33 bushels lower than that of the previous year, and 42 bushels less than the average for the eight years. The East Midland group goes seven bushels over the average of the province for the term of years, but no other district reaches it. The total yield of the province falls below the average for the eight years, and is 466,625 bushels less than in 1888. The Georgian Bay and St. Lawrence and Ottawa counties and the Northern districts exceed their respective total yields of 1888, and the two groups last named surpass their respective averages for the eight years.

TURNIPS.—The sowing of turnips was very much delayed by the wet weather, and the backward start could not be overtaken. Some Muskoka correspondents stated that the crop had to be let go altogether, as owing to the wet weather prevailing in the early part of the summer the seed could not be placed in the ground. The fly put in an appearance in some of the eastern counties, but in the sections where the crop is most largely grown the reports were most encouraging. According to the November returns turnips were not only low in yield, but also small in size. The acreage and yield are shown in the following table:

Districts.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Lake Erie	2,896	779,100	269	2,998	1,196,468	399	2,131	736,121	345
Lake Huron	12,948	3,978,598	307	13,197	5,161,444	391	12,540	4,737,328	378
Georgian Bay	13,038	4,536,222	348	13,270	4,867,595	367	12,194	4,788,640	393
West Midland	35,065	10,440,234	298	36,882	16,398,159	445	34,494	13,772,119	399
Lake Ontario	33,037	12,202,146	369	33,295	15,437,295	464	28,706	11,385,450	397
St. Lawrence & Ottawa	4,479	1,601,906	358	4,400	1,342,117	305	3,832	1,258,861	329
East Midland	7,339	2,662,901	363	7,091	2,643,262	373	5,575	1,917,807	344
Northern Districts	2,301	820,153	356	2,055	593,897	289	2,065	643,523	312
Totals	111,103	37,021,260	333	113,188	47,640,237	421	101,537	39,239,849	386

Although the area in turnips in the province exceeds its average for the eight years 1882-9, it is 2,085 acres below the area of 1888. Compared with the previous year there is a falling off in the area of the first five groups in the table. The yield per acre for the province is 53 bushels lower than the average for the eight years, and 88 bushels less than that of 1888. Not one group reaches the average of the province for the eight years. The total yields of the St. Lawrence and Ottawa and East Midland counties and the Northern districts are above their respective records in 1888, but the other groups fall far behind their last year's figures. The total yield of the province is 10,618,977 bushels short of that of the previous year, and is less by 2,218,589 bushels than the average for the eight years.

COMPARATIVE YIELD OF FIELD CROPS.

AGGREGATE YIELD OF CROPS.—Two elements, the acreage under crop and the yield per acre, enter into the comparison afforded by the following table. These variables lend a shifting character to the aggregate yield of crops, and are dealt with more particularly elsewhere. The total yield of the staple crops of the province are here

presented by county groups for each of the five years 1885-9, together with their averages for the five years and for the eight years 1882-9 :

Field Crops.	1889.	1888.	1887.	1886.	1885.	1885-9.	1882-9.
	Bush.	Bush.	Bush.	Bush.	Bush.	Bush.	Bush.
Fall wheat	13,001,865	13,830,787	14,440.611	18,071,142	21,478,281	16,164,537	18,056,560
Spring wheat	5,697,707	6,453.559	5,633,117	9,518,553	9,129,881	7,286,563	8,804,318
Barley	23,386,388	23,366,569	17,134,830	19,512,278	16,533,587	19,986,730	20,218,930
Oats	64,346,301	65,466,911	49,848,101	58,665,608	55,229,742	58,711,333	57,041,035
Rye	1,431,679	1,295,302	894,887	1,106,462	1,271,506	1,199,967	1,766,767
Pease	13,509,237	14,269,863	12,173,332	16,043,734	14,006,192	14,000,472	13,171,725
Corn	9,248,199	17,436,780	8,404,752	10,805,309	10,741,391	11,327,286	11,856,141
Buckwheat	1,272,578	1,222,283	1,025,353	1,678,708	1,530,675	1,345,919	1,353,877
Beans	371,893	534,526	275,975	482,072	496,564	432,206	451,855
Potatoes	14,355,529	22,273,607	10,678,000	16,012,358	21,091,144	16,882,128	18,348,728
Mangel-wurzels	7,223,478	10,020,659	5,695.761	8,787,743	7,660,729	7,877,674	7,750,874
Carrots	3,431,959	3,898,584	2,105,686	3,478,751	3,462,319	3,275,460	3,571,114
Turnips	37,021,260	47,640,237	31,413,456	47,061,053	41,137,735	40,854,748	39,239,849
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Hay and clover	3,728,313	2,009,017	3,093,610	2,994,446	3,252,155	3,015,508	3,041,077

The aggregate of fall wheat has steadily fallen every year, and the yield of spring wheat has been less than in any year of the five excepting 1887. Barley surpasses any year of the table in total yield, but oats fall behind the figures for 1888. Both of these crops are ahead of their averages for the two series of years. Rye never gave so heavy a yield before, but pease is behind every year excepting 1887. Corn is but little more than half of its total yield of the previous year, and is also greatly below its average for the series of years. Buckwheat has slightly increased its figures over the previous year, but does not reach the yields of 1885 and 1886. Beans are much below the yield of any year save 1887, and the same may be said of potatoes, mangel-wurzels, carrots and turnips. Haymakes a better showing than in any other year.

Ratios of Aggregate Production.—In the table which follows is shown the ratios of aggregate production of the several crops in 1889, by county groups and for the province, as compared with the eight years 1882-9.

Districts.	Fall wheat.	Spring wheat.	Barley.	Oats.	Rye.	Pease.	Corn.	Buckwheat.	Beans.	Hay and clover.	Potatoes.	Mangel-wurzels.	Carrots.	Turnips.
Lake Erie	76	52	101	98	88	111	60	84	82	131	47	100	108	106
Lake Huron	63	30	105	106	115	96	71	70	73	129	71	97	82	84
Georgian Bay	80	66	111	127	101	115	143	70	112	131	82	78	85	95
West Midland	63	37	120	117	95	95	77	75	58	114	63	84	81	76
Lake Ontario	81	69	123	114	93	103	105	101	74	117	83	92	99	107
St. Lawrence and Ottawa	74	80	103	106	68	92	133	96	93	126	80	104	111	127
East Midland	92	73	114	131	75	119	128	95	80	116	117	136	126	139
Northern Districts	106	70	81	132	95	124	130	79	145	118	129	85	142	127
The Province	72	65	116	113	81	103	78	94	82	122	78	93	96	94

The Northern districts are highest in fall wheat, oats, pease, beans, potatoes and carrots, the St. Lawrence and Ottawa counties in spring wheat, the Lake Ontario counties

in barley and buckwheat, the Lake Huron counties in rye, the Georgian Bay counties in corn and equal with the Lake Erie counties in hay and clover, and the East Midland in mangel-wurzels and turnips.

YIELD PER ACRE.—The following table gives the yield per acre by county groups and for the province for each of the field crops for the years 1888 and 1889, with the average for the eight years 1882-9:

Field Crops.	Lake Erie.	Lake Huron.	Georgian Bay.	West Midland.	Lake Ontario.	St. Lawrence and Ottawa.	East Midland.	Northern Districts.	The Province.			
									1889.	1888.	1885-9.	1882-9.
	Bush.	Bush.	Bush.	Bush.	Bush.	Bush.	Bush.	Bush.	Bush.	Bush.	Bush.	Bush.
Fall wheat	15.1	14 2	16.4	15.4	18.4	18.5	15.6	15.4	15.8	16.7	18.8	19.4
Spring wheat ...	14.5	12.5	13.7	13.2	15.0	14.6	13.3	17.7	14.3	17.5	13.9	15.6
Barley	24.1	24.8	25.4	28.9	27.7	24.2	25.6	22.5	26.7	26.1	25.8	26.2
Oats	32.0	30.5	32.6	37.2	36.5	30.1	34.0	30.8	33.5	35.4	34.0	35.3
Rye.....	12.3	18.1	18.0	14.4	15.0	19.3	15.6	18.4	15.9	15.4	15.4	16.3
Pease	17.3	18.4	22.0	17.4	18.6	20.3	21.6	22.9	19.1	20.5	20.1	20.4
Corn	45.7	40.8	48.1	48.4	54.4	61.2	51.6	45.2	49.4	78.2	63.0	64.9
Buckwheat.....	18.7	18.1	16.3	18.6	19.6	26.9	22.9	24.0	22.6	21.2	21.7	22.2
Beans.....	15.4	18.3	20.0	19.1	18.7	23.6	14.8	19.7	17.0	23.5	19.6	20.4
Potatoes	63.0	91.8	107.7	84.3	95.9	102.0	134.7	167.6	98.5	144.7	114.1	118.7
Mangel-wurzels..	295	358	417	305	364	357	390	255	341	467	414	423
Carrots	231	273	342	282	334	288	354	328	305	338	326	347
Turnips	269	307	348	298	369	358	363	356	333	421	385	386
	Ton.	Ton.	Ton.	Ton.	Ton.	Ton.	Ton.	Ton.	Ton.	Ton.	Ton.	Ton.
Hay and Clover..	1.71	1.55	1.46	1.63	1.60	1.54	1.32	1.22	1.56	0.88	1.31	1.36

Barley, rye, buckwheat, turnips and hay are the only crops which have increased their yield per acre compared with the previous year, and barley, buckwheat and hay are the ones exceeding their average for the eight years 1882-9. The greatest decrease in yield is to be seen in corn, beans and mangel-wurzels, and the largest increase is observed in hay.

RATIOS OF YIELD PER ACRE.—The per cent. ratios of the average yield per acre of the leading field crops compared with the average yield of the eight years 1882-9 are given by county groups and for the province in the following table, each group, of course, being compared with its own average:

Districts.	Fall Wheat.	Spring wheat.	Barley.	Oats.	Rye.	Pease.	Corn.	Buckwheat.	Beans.	Hay and clover.	Potatoes.	Mangel-wurzels.	Carrots.	Turnips.
Lake Erie.....	82	97	96	86	79	91	65	94	79	120	58	77	84	78
Lake Huron	74	91	92	85	104	84	67	92	86	114	80	84	78	81
Georgian Bay.....	80	94	100	99	98	103	92	96	110	117	86	100	94	89
West Midland	79	90	101	97	88	81	74	95	91	110	72	69	77	75
Lake Ontario.....	91	91	105	99	101	93	92	89	86	117	86	84	90	93
St. Lawrence and Ottawa....	103	88	99	92	107	105	110	114	97	116	82	97	95	109
East Midland.....	79	91	106	108	100	116	101	103	79	112	109	99	108	106
Northern Districts.....	80	97	95	97	95	99	111	93	95	104	112	99	126	114
The Province.....	81	92	102	95	98	94	76	102	83	115	83	81	88	86

For the province barley and buckwheat each show 102, and hay rises to 115, but the other eleven crops are more or less below the line of average, dipping in the case of corn to 76. Fall wheat, however, shows a higher percentage than the average in one group, oats in one, rye had 100 or more in four districts, pease in three, corn in three, beans in one, potatoes in two, mangels in one, carrots in one, and turnips in three.

ONTARIO VS. AMERICAN STATES.—The following table affords an interesting comparison of the average yield per acre in bushels of the principal cereals in Ontario and the best of the grain-growing states of the American Union, the figures being given for 1888 and 1889, together with the averages for the five years 1885-9, and the eight years 1882-9 :

Crops.	Ontario.	New York.	Pennsylvania.	Ohio.	Michigan.	Indiana.	Illinois.	Wisconsin.	Minnesota.	Iowa.	Missouri.	Kansas.	Nebraska.	California.	Dakota.
Fall Wheat.															
1889	15.8	13.8	12.3	14.6	14.7	14.7	16.0	....	....	....	13.0	18.4	....	13.3	....
1888	16.7	14.1	13.5	10.8	14.6	10.4	13.7	....	....	....	12.0	15.2	....	12.1	....
1885-9	18.8	15.0	11.6	12.7	15.6	12.8	13.4	....	....	....	12.4	13.0	....	11.5	...
1882-9	19.4	14.7	12.3	13.0	15.6	12.9	13.3	....	....	....	11.9	14.9	....	12.1	....
Spring Wheat.															
1889	14.3	.	...	....	....	....	....	14.2	14.6	13.1	....	....	12.0	....	9.4
1888	17.5	....	....	....	....	....	....	11.5	9.0	9.8	....	....	9.3	....	9.7
1885-9	13.9	....	....	....	....	....	....	11.8	12.1	11.3	....	....	10.7	....	11.5
1882-9	15 6	...	....	....	....	....	...	12.5	14.7	11.3	....	....	11.8	....	13.0
Barley.															
1889	26.7	21.1	18.3	21.5	....	21.3	21.6	24.5	25.6	22.4	21.0	24.0	22.7	20.3	...
1888	26.1	21.8	18.2	22.4	22.5	18.7	22.4	22.5	18.5	21.0	18.4	20.5	22.5	20.0	20.3
1885-9	25.8	21.4	18.2	22.4	22.0	19.3	21.7	22.8	21.8	21.6	20.5	21.4	22.3	20.2	17.1
1882-9	26.2	22.3	19.8	22.0	21.6	20.0	22.3	23.3	22.4	21.8	21.0	21.5	22.2	19.7	24.8
Oats.															
1889	33.5	24.5	26.2	32.3	33.7	27.7	37.5	35.5	28.0	34.5	25.5	31.5	31.6	25.0	15.5
1888	35.4	28.1	26.5	31.8	33.2	26.5	35.8	29.4	28.7	26.2	25.2	25.3	25.8	28.8	27.2
1885-9	34.0	26.5	26.6	32 8	32.3	27.7	33.5	30.3	31.2	31.8	25.1	28.3	29.7	27.3	27.3
1882-9	35.3	28.0	27.4	31.6	32.6	28.2	34.6	30.6	33.1	32.6	26.4	30.4	30.7	26.9	31.4

In studying this table of comparison it should be remembered that Ontario is pitted against those states only in which the cereals named in the table are staple crops. In fall wheat Ontario comes behind Kansas and Illinois in 1889, but in the averages for the series of years it is 3.8 bushels ahead of the highest state. Minnesota alone leads the province in spring wheat for the year, but the averages for the five and eight years are in favor of Ontario, which exceeds Minnesota, the highest state, by .9 bushel per acre. The province sweeps the field in barley, the average yield of 26.7 bushels for the year being 1.1 more than that of the best state, and this yield is fully maintained in the averages for the series of years. Four out of fourteen states surpass Ontario in the average yield

of oats in 1889, but as in the case of the other cereals the province leads in the averages for the five and eight years terms. Briefly stated, Ontario continues to head the list in the yields of each of the four grains for the five and eight years periods.

FRUIT AND FRUIT TREES.

The May bulletin, which was based on returns received up to the 1st of that month, stated that vegetation was a week or two in advance of the previous year. Orchards were very little injured during the winter, but in the case of peaches the blossoms were nipped by the early spring frosts. The usual chorus was heard regarding the destructive work of the black-knot among plum and cherry trees, but not a single note was uttered concerning any injury to trees from mice or other field vermin during the winter.

Correspondents next reported on July 1st, when the accounts received of injury to orchard and garden were alarming. Frosts in the later part of May caught the orchards in the height of their blossoming, and the result was destruction of the most extensive character. Apples suffered terribly. In many orchards it was hard to find a single specimen of fruit, in others there was perhaps half a yield, but nowhere was there anything like the ordinary bearing of fruit. It was pointed out by some correspondents that the Northern Spy escaped the frost better than any other variety. The tent caterpillar was reported in Carleton. Pears, plums, cherries and peaches were also injured in blossom. Grapes fell an easy prey to the frost, for while in a few favored situations the vines escaped harm, the general record was one of complete loss of the first bud. In some instances the wood was killed to the earth. Small fruits generally were more or less injured, strawberries being only about half a crop, while currants also gave a light yield. Raspberries, however, did remarkably well.

The summing up of the latest returns, given in the November bulletin, is as follows: "Fruit trees generally are reported to be in good condition. Here and there drouth appears to have affected them, and a sleet storm in October did damage in several western counties, but taken altogether the orchards are in a promising condition for next year's yield. Insect pests were not very bad, although the codlin moth was operating in Kent, York and some of the eastern counties, and the tent caterpillar showed itself in various portions of the St. Lawrence and Ottawa and East Midland groups. Except in the counties of Essex, Kent, Elgin and Lambton, whence a considerable ship, ment of apples has been made, and in those portions of other towns skirting the lakes the general product of fruit tree, bush and vine was light. The frost is accredited with causing the greater part of the damage. The quality of apples is below the standard. While some splendid specimens were shown at the fall fairs, the bulk of this fruit was small, deficient in flavor, and, in the case of the popular Fameuse (Snow apple) very scabby. In the county of Huron, where usually it is difficult to find buyers for the immense yield of apples, a considerable quantity had to be imported to supply the local demand. Pears turned out well in the western counties, and are steadily growing in favor with Ontario orchardists. In the county of Grey plums are said to have borne generously, and a scattering favorable report was heard regarding the cherry, but the majority of the reports were most discouraging regarding these fruits. Small fruits shared in the injury wrought by the heavy frost in the latter part of May; good yields were exceptional. In the Northern districts, where wild fruits are usually depended upon, the yield was fair, with the exception of cranberries. In Kent and one or two other counties complaints are made that nuts were also hurt by the frosts taking them when beginning to form."

AREA IN ORCHARD AND GARDEN.—The following table shows the area in orchard and garden by county groups and for the province for each of the years

1882-9, together with the average for the eight years, and the rate per 1,000 acres cleared in 1889 :

Year.	Lake Erie.	Lake Huron.	Georgian Bay.	West Midland.	Lake Ontario.	St Lawrence and Ottawa.	East Midland.	Northern Districts.	The Province.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1889	39,699	21,105	11,729	37,256	52,242	12,079	8,130	526	182,766
1888	38,015	20,342	11,620	36,524	53,881	11,733	7,839	603	180,557
1887	37,067	19,874	11,129	37,402	54,080	12,401	8,911	578	181,442
1886	39,028	19,946	11,097	38,304	56,622	12,375	8,635	609	186,616
1885	39,844	19,925	11,555	40,593	56,796	13,145	8,838	570	191,266
1884	39,952	19,952	11,577	41,628	55,112	14,320	9,780	516	192,837
1883	40,084	19,907	12,228	42,800	57,358	14,760	9,950	363	197,450
1882	42,700	21,478	14,347	44,987	58,559	19,028	12,285	462	213,846
1882-9	39,549	20,316	11,910	39,937	55,581	13,730	9,296	528	190,847
Rate per 1,000 acres cleared in 1889	29.0	16.2	11.4	16.4	23.0	5.3	9.9	4.1	15.9

The figures for the province show an increase of 2,209 acres over the previous year although a decrease is observed in the Lake Ontario group and the Northern districts. The ratio in orchard and garden per 1,000 acres cleared varies from 4.1 in the Northern districts to 29.0 in the Lake Erie group, but the average rate for the province is only 15.9.

GENERAL REMARKS.

The following extracts are made from the general remarks of correspondents of the Bureau :

James Srigley, Pelee Island, Essex : We have grown some sweet potatoes and tobacco, and both have done very fairly.

Henry Davis, Mersea, Essex : I may say here that Hungarian grass is a paying thing to sow for feed for young cattle or old horses and colts. It may be sown any time in June or even into the first part of July. I have had it yield over three tons per acre, and it is better than timothy hay. It is splendid if the hay crop fails, and may be sown to great advantage even if the hay crop is good. Pumpkins are better than turnips for cows giving milk.

Denis J. Janisse, Sandwich E., Essex : A good many farmers have devoted their attention to grape growing in this locality, and a large number of vines have been planted.

Henry Morand, Sandwich E., Essex : Grape culture is being carried on on a large scale already, as this county is said by some old French vine growers to be one of the most favorable sections in the Dominion for the grape.

George Robinson, Romney, Kent : Tobacco is sometimes grown here, but the plants were very nearly all killed this year by June freshets. We are of the opinion that more money could be made in these townships by growing tobacco than by raising any other crop.

John Crawford, Howard, Kent : I have known orchards in Howard not more than five or six acres in extent which have commanded $1,000 or $1,200 for the apple crop.

Lewis Simpson, Dorchester S., Elgin : Flax is grown to a considerable extent in the vicinity of Belmont, and has been for the last twenty years. Where the business was managed with care it has proved remunerative. It pays the farmer well, as he is at no expense ; he gets the money for his labor and the use of his land.

James Stitt, Charlotteville, Norfolk : Poultry are commanding more interest than formerly. Eggs find a ready sale and good prices in cash. They are taken right from the door and the cash paid for them.

Martin Wattson, Bosanquet, Lambton : It has been a favorable season for flax altogether, though the fibre was a long time spread before the rains came. The seed is not so heavy as usual nor the fibre quite so long.

B. A. Howland, Bosanquet, Lambton : Flax is grown to the extent of about 500 acres, and has been this year a very fair crop. The dry weather during the curing season has been unfavorable, and has as a natural consequence will be considerably more difficult to manufacture.

Wm. S. Howell, Sombra, Lambton: Considerable millet is sown upon new land for winter feed. Some get the ripe seed ground, and find that it makes fattening feed.

John Watson, Morris, Huron: I may mention under this head that flax is sown to quite an extent here, and yields heavy crops at remunerative prices.

G. Edwin Cresswell, Tuckersmith, Huron: One very valuable crop for the feeding of sheep or lambs for the Buffalo market is rape. I have tried it with most excellent results. Any farmer fattening a bunch of lambs for the Christmas market should make a trial of this valuable plant.

John Craig, Amabel, Bruce: I have found sheep the best paying investment on the place.

John Nicholls, Kinloss, Bruce: With us, bees are of more profit than all the rest—both farm and stock combined. A great many thousands of pounds of honey have been consumed in the locality. The demand has exceeded the supply, and prices have risen.

John Black, Bentinck, Grey: Corn fodder wherever sown has done well, and it would pay to grow it on a larger scale than heretofore, even, for feeding to cows in the fall when the pastures fail.

Samuel Taylor, Medonte, Simcoe: Farmers spend too much money in implements. The advantages of these machines are pressed upon them by agents, so they buy; then they put in a larger area of grain to pay for them, and not manuring more than previously they are beggaring their farms.

Malcolm Campbell, Ekfrid, Middlesex: I think it would greatly improve our roads, and enable us to more easily take our produce to market, to abolish the antiquated system of statute labor and to have the road tax expended by commissioners, under either township or county councils, who would have trained men and proper tools and teams always employed on the highways.

John Dickson, Nissouri W., Middlesex: One farmer around here has raised hemp this year, and it has turned out splendidly.

E. H. Brown, Nissouri E., Oxford: The pork industry is attracting rather more attention than formerly.

Thomas Page, Wallace, Perth: Onions are largely grown in the neighborhood of Listowel.

Wm. Mountain, Downie, Perth: If farmers would patronise farmer's institutes to a greater extent it would be much to their advantage in the opportunity afforded to acquire knowledge from men who have made a particular line a life study.

Thomas Maguire, Wallace, Perth: Flax is a crop of considerable importance, and taking one season with another it appears to pay as well as other crops. The fibre with seed on sells at the mill for $10 per ton.

J. H. Smith, South, Lincoln: This township is becoming famous for its vineyards. Our soil and climate seem well adapted for this industry, but this season has been an exception.

Samuel Shearer, Niagara, Lincoln: The farmers of this section are going largely into peach culture. Thousands of trees are being planted yearly, and where situated near the lake or river on suitable soil and properly taken care of they seem to be profitable. As much as $500 has been got for the product of an acre during the past season. But the business may be overdone, and many are planting on soil that is in every way unsuitable.

Wm. Thompson, jr., Esquesing, Halton: Hops are grown to some extent in this locality. This year there is only about half the average yield of hops.

James Parnham, Gwillimbury E., York: A good deal of marsh hay is cut on the Holland river marsh near here, and is sold for upholstering purposes.

Wm. Clark, York, York: There are many farms in Ontario suitable only for sheep raising, and yet no sheep are found on them. The sheep industry is deserving of more attention.

C. B. Booth, Percy, Northumberland: Considerable golden millet is grown in this locality as a forage crop. It is good feed either green or cured. It is generally sown in low places, but this year was too wet for it. Those who chanced to sow on high land had splendid results. Drying fruit and corn is another industry that has paid well this last year.

Luther Platt, Athol, Prince Edward: A very large and important branch of industry in this country is the growth of seed pease—chiefly the early varieties—together with what is required for canning purposes, such as late pease, beans, tomatoes and the various kinds of berries.

Wm. B. Leavens, Hallowell, Prince Edward: Hops are an important crop. Many are gradually going out of grain raising and are growing small fruits for profit. Fancy pease are a specialty of this county. Several firms lend garden pease to farmers to be sown, and the product returned at a fixed price. These are then hand-picked and shipped to Southern growers who supply the large cities with early green pease, but who do not raise their own seed. About 5,000 acres in this county was given to the crop the present year. The county of Prince Edward is counted the best place in America for growing seed pease. The canning factories use a great deal of produce in the shape of green pease, beans, sweet corn, tomatoes, etc., and many acres are given to raising these in this county.

R. J. Spoor, Wolfe Island, Frontenac: Sparrows are very numerous, and are increasing rapidly. A premium should be offered for their destruction, as they consume a great deal of grain.

Alex. Farlinger, Williamsburg, Dundas: The English sparrow is the greatest nusiance, destroying large quantities of grain, especially wheat.

Alex. Dow, jr., Osgoode, Carleton: This year will be remembered because there has been quite a few very fine young thoroughbred Ayrshire cattle brought in by some of our leading men. In sheep some fine flocks of Downs and Shrops are already well established. Swine are receiving their share of attention; proximity to Ottawa market being an inducement to produce young pork, which is always in demand. There is a very large and profitable business done here in raising draft horses to supply the need of the Ottawa lumbermen and the draymen of the city.

R. W. Payne, Dummer, Peterborough: Hundreds of tons of Mammoth Sweet Corn have been grown in this locality to profit this year. There has been as high as 40 tons per acre grown.

STATISTICS OF

THE WEATHER AND THE CROPS.

THE WEATHER.

TABLE No. I.—Showing for each month the highest, lowest, mean highest, mean lowest and mean tempeature at the principal stations in Ontario in 1889; also the annual mean for each station.

	Temperature.	Saugeen.	Birnam.	London.	Woodstock.	Stoney Creek.	Toronto.	Lindsay.	Gravenhurst.	Ottawa.	Rockliffe.
		°	°	°	°	°	°	°	°	°	°
January.	Highest	49.0	43.8	46.0	47.5	53.0	46.5	43.8	42.0	46.4	45.8
	Lowest	1.1	0.0	3.9	0.1	9.0	—0.7	—6.7	—12.8	—5.8	—19.6
	Mean highest	32.7	31.9	33.5	32.8	35.7	33.9	30.4	29.8	27.1	25.8
	Mean lowest	21.3	20.5	20.4	17.2	24.1	21.4	15.9	14.1	14.1	8.5
	Monthly mean	25.8	26.1	27.9	26.3	30.1	28.0	23.3	22.6	21.2	16.3
February.	Highest	41.0	45.2	42.0	40.7	43.0	39.8	39.3	38.0	40.0	39.1
	Lowest	—9.5	—24.1	—22.6	—18.6	—9.0	—11.3	—17.4	—33.0	—31.6	—37.4
	Mean highest	24.6	23.7	25.9	25.2	28.5	26.1	20.9	22.3	19.0	17.9
	Mean lowest	5.9	7.6	7.0	4.5	11.0	8.0	—0.8	—4.6	—4.0	—10.2
	Monthly mean	13.7	15.6	17.7	16.7	19.8	17.8	11.4	9.9	8.0	2.4
March.	Highest	56.2	58.3	58.1	59.6	63.0	54.8	51.4	51.0	49.8	55.9
	Lowest	10.1	11.2	15.0	13.4	17.0	11.1	4.7	—7.4	8.1	—5.6
	Mean highest	38.9	40.3	41.9	40.8	40.3	39.3	38.1	39.7	37.6	39.6
	Mean lowest	23.2	25.4	26.2	24.9	29.1	26.5	21.2	17.9	20.3	15.5
	Monthly mean	28.9	32.7	34.8	33.4	34.4	32.9	29.0	28.8	29.1	26.2
April.	Highest	73.5	77.7	77.9	76.4	81.0	67.3	74.8	71.0	79.9	78.7
	Lowest	24.1	15.0	19.9	21.6	25.0	25.5	19.8	21.0	22.1	16.9
	Mean highest	50.0	53.0	54.0	53.1	54.8	51.7	54.0	53.0	54.9	54.6
	Mean lowest	33.1	33.9	33.5	32.4	37.3	34.9	32.4	30.0	33.2	29.2
	Monthly mean	40.1	43.4	45.8	43.8	45.4	43.5	42.2	41.6	45.0	40.0
May.	Highest	88.2	86.3	84.5	85.2	89.0	80.8	87.6	88.0	91.3	95.1
	Lowest	28.3	27.9	28.9	26.0	31.0	30.7	28.7	26.0	31.2	27.1
	Mean highest	62.4	65.0	65.8	65.4	67.2	63.2	66.0	66.0	68.9	67.2
	Mean lowest	42.1	43.2	44.7	43.1	47.4	44.6	42.6	42.4	44.9	40.6
	Monthly mean	50.9	54.1	57.0	55.4	57.4	54.0	54.8	54.8	57.8	53.3
June.	Highest	81.0	83.6	83.5	82.5	83.0	78.3	83.5	84.0	89.3	87.8
	Lowest	41.6	38.6	40.0	39.0	44.0	44.2	39.6	39.0	36.5	32.1
	Mean highest	65.7	70.9	70.6	70.9	70.9	68.5	69.4	68.9	72.2	71.2
	Mean lowest	47.9	51.7	52.9	50.7	53.4	52.0	50.4	48.4	52.0	47.1
	Monthly mean	55.0	61.3	63.7	62.3	62.2	59.7	59.4	58.8	63.1	57.5
July.	Highest	86.0	88.1	89.0	90.0	96.0	88.7	90.6	91.0	91.7	89.7
	Lowest	42.1	40 5	46.1	45.0	47.0	47.7	43.0	45.0	48.4	41.8
	Mean highest	74.7	78.9	78.0	79.7	81.8	78.4	78.8	78.3	79.2	77.8
	Mean lowest	56.3	55.5	57.7	55.5	61.2	59.9	55.8	55.3	58 6	54.6
	Monthly mean	65.2	67.2	71.0	68.8	71.5	68.9	67.1	68.0	69.6	65 3
August.	Highest	82.1	86.9	87.0	89.5	88.0	83.9	82.9	86.0	87.6	84.7
	Lowest	43.1	39.2	44.1	42.0	40.0	45.8	40.4	43.0	46.0	39.4
	Mean highest	72.6	79.3	76.7	79.1	78.7	75.4	74.0	74.7	75.7	72.4
	Mean lowest	54.9	39.2	54.3	51.6	58.4	56.1	51.7	49.4	54.3	50.4
	Monthly mean	62.8	66.3	68.7	65.9	68.8	65.0	62.2	62.8	65.2	59.4
Septem'r.	Highest	86.8	90.4	86.8	91.3	91.0	81.9	84.8	85.0	88.9	86.7
	Lowest	36.5	33.7	34.1	31.0	34.0	35.3	30.2	35.0	33.6	31.2
	Mean highest	70.2	71.7	70.7	71.4	70.8	68.2	69.2	71.4	70.2	68.9
	Mean lowest	50.4	49.4	50.0	47.8	52.1	52.0	48.2	50.1	49.6	46.9
	Monthly mean	57.3	60.5	62.5	59.9	61.8	60.0	58.0	59.3	59.6	54.1
October.	Highest	63.0	63.1	63.1	64.4	68.0	61.5	60.6	66.0	64.2	61.8
	Lowest	12.1	19.0	19.0	15.0	17.0	22.6	16.7	16.0	16.5	11.0
	Mean highest	48.9	50.5	51.3	51.5	50.7	49.8	48.2	50.8	47.4	46.2
	Mean lowest	34.1	34.5	33.6	32.1	34.9	35.6	30.0	31.2	30.9	27.7
	Monthly mean	39.7	42.5	43.8	42.3	43.8	42.7	38.2	39.4	39.4	34.7
Novemb'r.	Highest	57.5	59.0	59.0	61.0	63.0	56.8	59.0	58.0	57.8	50.0
	Lowest	8.9	11.0	14.5	14.5	16.0	16.9	4.0	9.0	6.3	6.1
	Mean highest	43.9	42.5	44.1	42.9	45.7	43.9	41.6	42.7	40.3	38.9
	Mean lowest	31.6	33.2	32.9	31.4	34.5	33.2	4.0	29.1	27.8	25.0
	Monthly mean	36.1	37.9	39.0	37.9	40.1	38.6	34.5	35.4	34.4	30.4
Decemb'r.	Highest	60.1	60.0	57.1	56.0	60.0	56.1	49.6	47.0	43.7	47.0
	Lowest	0.9	6.5	3.8	2.1	9.0	3.2	—10.7	—10.8	— 8 8	—16.6
	Mean highest	41.7	39.6	42.4	41.1	43.5	40.5	35.6	36.6	30.6	29.3
	Mean lowest	26.9	28.3	27.5	26.1	30.5	27.9	21.6	21.0	13.5	11.5
	Monthly mean	32.3	34.0	35.6	33.9	37.2	34.2	29.0	28.6	22.7	20.4
	Annual mean	42.3	45.1	47.3	45.5	47.7	45.4	42.4	42.5	42 9	38.3

THE WEATHER.

TABLE No. II.—Showing for each month the annual average of the highest, lowest, mean highest, mean lowest and mean temperature at the principal stations in Ontario derived from the eight years 1882-9; also the average annual mean at each station for the same period.

	Temperature.	Saugeen.	Pirnam.	London.	Woodstock.	Stoney Creek.	Toronto.	Lindsay	Gravenhurst.	Ottawa.	Rockliffe.
		°	°	°	°	°	°	°	°	°	°
January.	Highest	44.7	45.7	45.9	46.1	51.0	44.0	41.8	42.3	39.7	39.0
	Lowest	−12.6	−13.5	−11.5	−17.6	−7.5	−12.2	−27.6	−30.8	−28.8	−38.1
	Mean highest	25.7	24.1	25.4	26.0	.....	26.5	21.9	21.6	17.4	16.7
	Mean lowest	9.9	11.0	10.6	7.6	.....	11.3	4.0	0.6	−1.0	−8.5
	Monthly mean	18.5	17.5	19.0	18.1	20.8	19.4	13.1	12.8	8.8	5.4
February.	Highest	45.0	47.1	45.7	46.2	45.8	43.0	42.6	42.4	38.5	41.8
	Lowest	−11.5	−19.6	−17.4	−14.5	−9.2	−10.2	−19.4	−25.0	−23.8	−34.6
	Mean highest	26.5	26.1	27.6	28.4	.....	28.2	25.1	24.7	20.1	20.6
	Mean lowest	9.9	10.1	9.9	8.6	.....	11.9	4.1	2.7	0.4	−5.8
	Monthly mean	18.3	18.1	19.4	19.8	21.1	20.6	15.2	14.6	10.7	8.4
March.	Highest	49.4	55.2	55.5	53.1	54.5	49.6	47.2	46.2	43.0	46.9
	Lowest	−5.7	−9.6	−6.6	−6.8	2.3	−0.1	−15.3	−16.5	−12.6	−26.1
	Mean highest	32.1	33.5	34.1	34.3	.....	33.5	31.3	31.3	29.1	30.3
	Mean lowest	15.2	16.9	16.7	15.6	.....	18.8	11.9	10.6	10.4	3.3
	Monthly mean	23.3	24.4	25.1	23.5	28.1	26.3	21.9	21.2	20.1	17.9
April.	Highest	74.0	79.4	77.8	77.2	79.0	69.2	74.6	69.9	73.9	73.1
	Lowest	11.9	14.3	16.9	15.1	23.3	20.4	11.8	8.1	10.8	2.9
	Mean highest	47.7	51.9	51.9	52.2	.....	48.8	49.5	47.7	48.1	47.9
	Mean lowest	29.5	31.7	31.5	30.1	.....	32.0	28.4	26.9	28.4	23.7
	Monthly mean	38.3	41.8	42.7	41.4	42.0	40.4	38.7	37.3	38.3	35.3
May.	Highest	78.9	83.7	81.0	80.4	82.8	75.6	81.5	80.5	81.7	86.0
	Lowest	27.5	27.7	30.5	29.1	37.3	31.6	27.4	26.5	30.2	23.9
	Mean highest	60.1	66.2	65.2	64.0	.....	61.3	64.9	63.5	66.6	64.5
	Mean lowest	40.1	42.8	43.9	41.6	.....	43.0	41.6	40.7	43.8	37.8
	Monthly mean	49.6	54.5	54.9	53.7	53.6	52.2	52.8	52.1	55.0	51.3
June.	Highest	83.4	87.6	85.3	87.5	88.8	83.6	88.3	87.3	87.5	88.2
	Lowest	36.8	36.0	40.2	38.0	46.8	42.5	37.2	36.7	40.4	34.3
	Mean highest	69.4	75.4	73.7	75.6	.....	72.1	75.3	73.9	76.5	74.1
	Mean lowest	49.0	51.5	53.0	51.2	.....	52.2	49.8	50.6	53.0	47.3
	Monthly mean	59.0	63.5	64.1	64.0	64.2	62.3	62.6	62.6	65.5	60.5
July.	Highest	86.9	90.8	88.8	89.0	94.2	88.8	91.4	88.1	89.8	90.4
	Lowest	40.2	41.4	46.2	44.9	52.3	48.4	43.1	43.4	47.7	40.5
	Mean highest	73.6	80.2	78.6	79.4	.....	77.2	79.7	77.8	78.6	77.3
	Mean lowest	53.6	55.2	56.9	54.6	.....	57.4	53.5	54.9	57.2	52.1
	Monthly mean	63.0	67.7	68.4	68.1	70.0	67.5	66.4	66.3	69.0	64.5
August.	Highest	87.7	89.5	87.9	89.1	91.9	86.1	89.8	88.0	87.9	88.4
	Lowest	40.1	38.4	40.4	41.9	48.2	45.6	38.0	40.2	42.4	37.6
	Mean highest	72.5	77.0	75.2	77.1	.....	74.8	76.4	74.4	75.4	74.2
	Mean lowest	53.2	52.8	53.8	52.4	.....	56.1	51.7	52.5	53.6	50.1
	Monthly mean	62.6	65.7	65.3	64.8	67.2	65.4	65.4	63.3	65.5	61.3
Septem'r.	Highest	83.4	87.0	84.6	86.6	88.8	81.7	85.7	83.3	82.6	83.6
	Lowest	32.2	31.8	33.0	30.7	37.7	36.5	29.6	31.7	30.8	29.1
	Mean highest	66.7	70.6	68.7	70.0	.....	67.4	69.0	67.9	67.1	66.6
	Mean lowest	47.1	48.2	49.2	45.8	.....	49.2	44.3	45.4	45.9	42.2
	Monthly mean	56.5	59.5	58.6	58.4	60.6	58.4	55.9	56.1	57.0	53.5
October.	Highest	72.3	76.2	72.7	74.3	73.5	69.7	73.3	70.8	66.9	70.4
	Lowest	20.7	21.1	22.4	20.9	24.3	24.9	17.9	20.0	21.0	16.3
	Mean highest	54.3	56.9	54.8	55.6	.....	53.8	53.7	53.6	50.8	50.1
	Mean lowest	37.2	38.4	36.9	35.6	.....	38.3	34.1	35.7	33.6	31.5
	Month mean	45.3	47.2	45.9	45.9	47.4	46.4	43.9	43.7	43.4	40.7
Novemb'r.	Highest	62.0	64.2	62.3	62.8	65.5	59.8	61.5	61.3	58.4	57.3
	Lowest	10.9	13.3	14.2	9.8	18.6	13.0	2.9	6.1	5.7	−3.4
	Mean highest	42.3	42.9	43.7	42.7	.....	42.7	40.2	40.8	38.9	36.6
	Mean lowest	29.2	30.4	29.5	27.5	.....	30.1	25.3	24.7	24.8	21.0
	Monthly mean	35.6	36.6	36.9	35.8	38.6	36.7	32.4	33.1	32.1	29.3
Decemb'r.	Highest	49.7	49.8	51.2	48.6	54.0	47.1	44.4	45.1	42.1	43.4
	Lowest	−2.2	−3.5	−4.1	−7.2	3.8	−1.7	15.7	13.1	16.5	−25.3
	Mean highest	32.8	32.8	33.7	32.3	.....	33.3	28.7	29.7	24.8	25.0
	Mean lowest	20.4	20.4	19.9	17.5	.....	20.7	13.2	13.9	8.8	4.9
	Monthly mean	26.8	26.3	27.5	26.0	30.2	27.6	21.7	22.7	17.6	15.3
	Annual mean	41.5	43.6	44.0	43.3	45.4	43.6	40.6	40.4	40.4	37.0

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TABLE No. III.—Monthly summary of bright sunshine at the principal stations in Ontario in 1889, showing the number of hours the sun was above the horizon, the hours of registered sunshine and the total for the year; also the average derived for the eight years 1882-9.

Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total for the year.
	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.
Hours of sun above horizon.	285.7	*291.4	369.9	406.4	461.1	465.7	470.9	434 5	376.3	340.2	286.9	274.3	4463.3
Woodstock. 1889..	67.7	80.6	160.1	178.9	197.1	169.3	274.1	240.7	189.8	128.4	62.3	86.7	1835.7
Woodstock. 1882-9	62.2	82.4	141.2	191.3	205.1	237.6	265.5	229.4	198.4	131.5	68.4	51.9	1864.9
Toronto. 1889..	76.4	99.0	150.9	189.8	202.3	181.3	303.2	229.8	203.9	127.6	67.9	77.1	1909.2
Toronto. 1882-9	78.7	96.9	151.4	192.3	225.0	263.0	287.7	254.2	212.8	140.7	77.6	46.4	2026.7
Barrie.. 1889..	57.0	81.5	146.2	170.1	197.6	111.7	271.2	215.6	159.2	119.5	60.3	39.3	1629.2
Barrie.. 1882-9	52.8	66.1	129.2	165.6	202.3	224.5	257.6	214.2	139.8	90.2	45.1	29.4	1616.8
Lindsay 1889..	72.2	101.1	150.1	209.5	198.3	171.9	298.4	229.3	198.9	123.1	72.3	55.2	1880.3
Lindsay 1882-9	78.9	97.1	158.8	202.9	224.9	258.0	282.1	236.9	204.6	132.5	73.6	51.8	2002.1
Kingston... 1889..	63.9	110.0	156.9	197.1	204.1	187.9	274.6	222.9	177.6	100.5	55.8	73.9	1825.2
Kingston... 1882-9	71.2	99.8	151.7	189.7	219.7	242.1	266.2	250.1	200.1	122.8	71.9	62.0	1947.3

*The average possible sunshine for February derived for the eight years 1882-9 was 294.5 hours.

TABLE No. IV.—Monthly summary of inches of rain and snow precipitation in the several districts of Ontario in 1889; also the average derived for the eight years 1882-9.

Districts.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total for the year.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
West and south-west:													
Rain 1889..	1.78	0.41	0.29	1.62	4.62	3.57	1.50	0.58	2.03	1.01	2.91	3.99	24.31
Rain 1882-9	1.12	1.67	1.28	1.61	3.23	3.29	2.57	2.65	2.42	2.45	2.37	1.59	26.25
Snow 1889..	16.0	19.8	6.2	3.7	S.	....	....	....	....	0.1	9.1	0.3	55 2
Snow 1882-9	18.3	11.9	10.7	4.1	0.1	....	....	....	....	0.3	6.6	14.3	66.3
North-west and north:													
Rain 1889..	0.90	0.18	R.	1.11	3.68	3.77	2.49	1.60	3.26	1.58	1.76	2.35	22.68
Rain 1882-9	1.00	0.71	0.88	1.31	2.61	2.87	2.37	2.49	3.07	2.85	2.08	1.24	23.48
Snow 1889..	26.6	30.6	6.9	7.2	S.	....	....	....	....	3.4	13.6	13.2	101.5
Snow 1882-9	30.3	22.6	14.0	4.6	0.3	....	....	....	....	1.5	14.8	21.8	109.9
Centre:													
Rain 1889..	1.53	0.31	R.	1.87	3.86	3.60	2.23	0.75	1.63	1.97	2.53	4.01	24.29
Rain 1882-9	1.16	1.27	1.12	1.54	2.69	3.03	2.30	2.22	2.47	2.13	2.17	1.53	23.63
Snow 1889..	20.7	16.8	8.3	3.9	S.	....	....	....	....	1.7	9.1	2.1	62.6
Snow 1882-9	19.6	12.1	9.9	3.8	0.1	....	....	....	....	0.3	5.8	11.7	63.3
East and north east:													
Rain 1889..	1.52	0.15	R.	1.31	3.33	3.86	3.11	1.60	2.07	1.68	2.29	2.45	23.37
Rain 1882-9	0.92	0.72	0.86	1.35	2.48	2.83	2.82	2.51	2.62	2.11	1.97	1.15	22.34
Snow 1889..	24.4	27.1	4.5	3.0	S.	....	....	....	....	0.9	12.3	9.5	81.7
Snow 1882-9	23.7	19.3	14.4	5.8	0.4	....	....	....	....	0.5	9.6	14.8	88.5

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TABLE No. V.—Summary of the total fall of Rain and Snow, and of the number of days on which Rain or Snow fell in Ontario during the years 1888 and 1889 at Stations reporting for the whole year, and the averages for the province.

Stations.	Observers.	Rain.				Snow.			
		1889.		1888.		1889.		1888.	
		Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.
ESSEX—									
Cottam	W. E. Wagstaff	28.98	73	30.24	100	12.9	9	25.5	30
Maidstone	T. F. Kane	23.57	82	25.49	103	9.0	5	.....	.....
KENT—									
Blenheim	W. R. Fellows	33.15	72	31.12	84	33.0	21	24.0	14
Chatham	W. D. A. Ross	25.79	73	26.03	58	30.2	29	31.4	29
Dealtown	S. J. Pardo	31.11	102	28.79	109	17.8	24	18.3	20
Ridgetown	Thos. Scane	27.41	115	25.59	124	50.5	30	36.0	36
ELGIN—									
Cowal	S. Maccoll	23.06	86	23.67	85	51.0	18	20.0	17
Lyons	W. McCredie	25.11	87	25.90	82	50.3	24	16.7	14
Port Stanley	M. Payne	30.38	142	27.18	143	64.7	65	36.2	68
NORFOLK—									
Port Dover	H. Morgan	22.43	122	31.03	132	41.8	46	16.0	45
WELLAND—									
Niagara Falls So.	E. Morden	31.23	93	28.22	102	46.0	24	25.3	31
LAMBTON—									
Birnam	J. S. Mellor	29.98	91	23.63	97	73.3	30	81.8	46
Oil Springs	A. Smyth	20.57	49	24.95	75	49.0	27	36.5	29
Sarnia	Wm. Mowbray	20.45	58	21.94	62	37.5	16	36.0	14
Thedford	Martin Wattson	26.46	101	26.68	112	63.5	25	54.0	34
Watford	D. Ross	26.97	68	24.23	71	.....	.....	.....	.....
HURON—									
Goderich, L. H.	R. Campbell	22.78	74	26.88	79	90.5	32	85.0	47
Sunshine	G. Hood	28.82	91	24.41	82	98.1	40	75 2	56
Zurich	G. Hess	29.21	89	25.87	89	96.3	37	70.4	49
BRUCE—									
Lucknow	M. Macdonald	30.09	120	25.99	103	111.6	67	100.7	69
Point Clark	J. Ray	21.76	42	22.98	41	99.0	18	65.0	16
Saugeen	Mrs. J. R. Stewart	23.99	109	21.32	113	111.2	71	102.2	84
GREY—									
Bognor	C. H. Heming	21.86	62	21.82	86	88.5	24	73.5	31
Durham	J. Gunn, M.D.	22.22	96	25.35	96	26.0	52	94.2	63
Owen Sound	John McLean	24.50	62	23.53	62	110.9	36	71.6	35
Presque Isle	J. McKenzie	27.99	90	23.83	80	115.8	49	88.2	48
SIMCOE—									
Coldwater	J. V. Lazenby	23.58	76	21.08	77	122.6	56	86.3	50
Orillia	H. A. Fitton	20.98	105	14.70	98	129.0	68	75.3	66
MIDDLESEX—									
London	E. B. Reed	24.43	107	25.90	81	123.0	36	51.7	36
Wilton Grove	H. Anderson	25.18	68	28.80	82	50.0	17	21.0	17
OXFORD—									
Princeton	D. Beamer	22.71	91	23.51	87	67.2	40	30.3	28
Woodstock	Prof. Wolverton	22.77	100	20.63	95	93.9	40	58.4	44
BRANT—									
Paris	John Kay	27.76	107	25.60	97	49.3	22	28 1	29
St. George	E. E. Kitchen	25.98	105	20.70	109	62.1	40	31.0	43
PERTH—									
Listowel	A. Kay	.....	.....	23.36	86	.....	.....	67.5	86
St. Marys		28.85	88	.....	.....	77.0	35	.....	.....
WELLINGTON—									
Elora	T. Connor	28.62	69	21.28	63	54.0	29	40.1	30
Fergus	A. D. Ferrier	24.20	112	20.49	107	98.4	53	81.9	63
Guelph O. A. C.	C. A. Zavitz	23.15	85	19.31	93	83.9	38	37.5	42

TABLE No. V.—THE WEATHER—*Continued.*

Stations.	Observers.	Rain.				Snow.			
		1889.		1888.		1889.		1888.	
		Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.
WATERLOO—									
Conestogo	G. A. McIntyre	24.76	102	21.57	99	68.8	50	40.7	66
DUFFERIN—									
Orangeville	N. Gordon	24.25	62	21.85	62	88.5	24	78.1	36
WENTWORTH—									
Stoney Creek	C. F. Van Wagner	27.40	94	30.25	92	66.3	29	31.0	27
HALTON—									
Georgetown	Jas. Barber, jr	24.94	117	20.50	127	78.3	56	37.5	71
YORK—									
Aurora	R. W. Amos	22.76	79	18.91	74	62.2	25	39.1	42
Scarborough	R. Martin	25.42	118	23.95	108	42.8	51	24.1	55
Toronto	Observatory	24.58	127	22.82	133	66.5	60	34.6	83
ONTARIO—									
Oshawa	Rev. J. Middleton	27.41	80	24.05	78	46.4	18	44.2	31
LENNOX & ADDINGTON—									
Denbigh	J. Lane	25.96	61	19.09	61	98.0	27	75.0	34
FRONTENAC—									
Kingston	A. P. Knight	26.71	124	25.90	114	88.4	49	68.1	65
LEEDS & GRENVILLE—									
Merrickville	J. Burchill	23.17	90	21.70	80	63.9	30	66.0	29
CARLETON—									
Ottawa	W. J. Chisholm	20.23	82	24.34	91	54.0	18	73.3	31
RENFREW—									
Clontarf	A. Schultz	22.78	103	20.33	97	97.5	46	95.4	68
Renfrew	W. E. Smallfield	22.66	73	13.19	62	78.7	23	43.5	19
Rockliffe	W. H. McIntyre	22.67	64	16.72	77	75.4	34	79.9	54
LANARK—									
Oliver's Ferry	W. J. McLean	25.73	73	20.27	58	65.0	26	40.3	18
VICTORIA—									
Bobcaygeon	J. Stewart	22.07	84	23.04	80	73.0	38	54.3	48
Lindsay	Thos. Beall	27.19	121	19.90	98	100.4	59	72.0	66
PETERBOROUGH—									
Ennismore	Thos. Tellford	27.15	97	22.42	87	69.5	51	47.0	55
Norwood	Rev. J. Carmichael	17.79	53	19.31	64	106.1	32	62.0	28
HALIBURTON—									
Haliburton	C. R. Stewart	24.13	94	23.70	97	82.9	48	67.7	63
HASTINGS—									
Deseronto	J. Russell	23.06	83	19.93	53	76.2	29	38.6	22
Shannonville	John Kemp	19.79	61	21.62	45	64.0	28	52.5	16
MUSKOKA—									
Bala	E. B. Sutton	25.53	117	25.16	90	85.7	63	68.5	36
Beatrice	J. Hollingworth	25.27	99	27.86	79	105.0	41	162.4	74
Charlinch	C. J. Tisdall	27.81	116	29.11	102	96.6	62	121.9	81
Gravenhurst	T. M. Robinson	24.81	92	18.64	90	100.5	45	95.8	52
PARRY SOUND—									
Uplands	P. Macdonald	33.75	111	31.26	82	104.8	67	123.4	70
Lynch Lake	G. Ambury	23.13	108	20.32	99	122.7	76	119.6	96
Parry Sound	Rev. R. Mosley	24.55	108	24.16	108	88.7	68	84.6	80
Sprucedale	A. McKenzie	24.92	65	22.84	62	72.0	23	79.6	29
ALGOMA—									
Little Current	R. S. Potts	43.77	65	31.77	50	77.8	29	108.1	35
Port Arthur	W. P. Cooke	18.40	91	20.12	87	61.0	45	62.4	42
Savanne	Agent C. P. R.	12.02	39	15.89	60	145.2	47	96.1	43
Average for the Province		25.20	89	1.56	73	75.7	38	59.3	43

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TABLE No. VI.—Comparative Meteorological Register for the eight years 1882-9 as recorded at Toronto Observatory, in Latitude 43° 39.4′ N, and Longitude 5h. 17m. 34.65s. W.

Register.	1889.	1888.	1887.	1886.	1885.	1884.	1883.	1882.
	°	°	°	°	°	°	°	°
Mean Temperature	45.44	42.70	44.14	43 71	41.57	43.79	41.95	45.42
Difference from average (49 yrs.)	+ 1.36	— 1.38	+ 0.06	— 0.37	— 2.51	— 0.29	— 2.13	- 1.34
Thermic anomaly (Lat. 43° 40′)	— 5.58	— 8.32	— 6.88	— 7.31	— 9.45	— 7.23	— 9.07	— 5.60
Highest temperature	88.7	92.0	97.2	89.5	88.6	89.6	83.4	89.9
Lowest temperature	— 11.3	— 16.1	— 16.6	— 22.8	— 16.1	— 13.3	— 10.5	— 17.4
Annual range	100.0	108.1	113.8	112.3	104.7	102.9	93.9	107.3
Mean daily range	15.55	16.55	17.12	16.53	16.85	17.05	17.07	15.70
Greatest daily range	42.8	37.7	34.0	32.6	39.2	34.8	38.4	36.0
Mean height of Bar. at 32° Fah.	29.6177	29.6448	29.6329	29.6255	29.5933	29.6273	29.6496	29.6515
Difference from average (48 yrs.)	— .0008	+ .0263	+ .0144	+ .0070	— .0252	+ .0088	+ .0311	+ .0330
Highest barometer	30.365	30.432	30.607	30.283	30.300	30.412	30.365	30.447
Lowest barometer	28.582	28.793	28.704	28.752	28.714	28.807	28.803	28.781
Annual range	1.783	1.639	1.903	1.531	1.586	1.605	1.562	1.66
Mean humidity of the air	74	74	75	77	77	76	77	74
Mean elasticity of aqueous vapour	0.271	0.243	0.261	0.260	0.249	0.261	0.249	0.265
Mean of cloudiness	0.63	0.63	0.63	0.61	0.61	0.63	0.64	0.63
Difference from average (35 yrs.)	+ 0.01	+ 0.01	+ .01	— .01	— .01	+ .01	.02	+ .01
Resultant direction of the wind	N 63 W N	59 W N	46 W N	56 W N	62 W N	65 W N	77 W N	47 W
" velocity of the wind	2.04	2.67	1.92	2.13	2.60	3.30	2.39	2.11
Average velocity (miles per hour)	9.08	9.71	9.88	9.73	9.95	10.29	10.08	10.42
Difference from average (14 yrs.)	— 0.60	+ 0.03	+ 0.20	+ 0.05	+ 0.27	+ 0.61	+ 0.40	+ 0.74
Total amount of rain	24.575	22.819	17.969	27.726	26.351	20.532	25.734	20.587
Difference from average (49 yrs.)	— 2.802	— 4.558	— 9.408	+ 0.349	— 1.026	— 6.845	— 1.643	— 6.790
Number of days of rain	127	133	106	112	103	123	124	110
Total amount of snow	66.5	34.6	77.9	73.5	65.6	80.2	84.0	42.5
Difference from average (46 yrs)	— 3.7	— 55.6	+ 7.7	+ 3.2	— 4.6	+ 10.0	+ 13.8	— 27.7
Number of days of snow	60	83	78	66	73	69	74	62
Number of fair days	187	175	203	196	203	184	181	209
Number of auroras observed	6	21	25	29	51	20	46	60
Possible to see aurora (No. of nights)	169	183	180	189	195	202	207	204
Number of thunderstorms	24	23	22	26	19	30	32	28
No. of hours of possible sunshine	4463.3	4474.4	4463.3	4463.3	4463 3	4474.4	4463.3	4463.3
No. of hours bright sunshine	1909.2	2048.3	2063.5	2034.4	2018.3	1931.8	2038.8	2169.5
Difference from average (8 years)	— 117.5	+ 21.6	+ 36.8	+ 7.7	— 8.4	— 94.9	+ 12.1	+ 142.

RURAL AREA.

TABLE No. VII.—Showing by County Municipalities and groups of Counties the Rural Area of Ontario as returned by Municipal Assessors for 1889.

Counties.	Acres of assessed Land.			Acres cleared.		Acres woodland.	Acres swamp, marsh or waste.	Per cent. cleared.
	Resident.	Non-resident.	Total occupied.	1889.	1888.			
Essex	411,297	19,279	430,576	202,984	194,695	205,491	22,101	47.1
Kent	546,396	23,717	570,113	294,498	283,404	250,465	25,150	51.7
Elgin	432,434	3,554	435,988	275,754	269,686	149,172	13,062	62.8
Norfolk	389,456	7,117	396,573	231,432	226,997	135,642	29,499	58.4
Haldimand	279,591	1,500	281,091	201,729	198,635	69,278	10,084	71.8
Welland	222,458	6,463	228,921	162,387	161,043	56,631	9,903	70.9
Totals	2,281,632	61,630	2,343,262	1,366,784	1,334,460	866,679	109,799	58.3
Lambton	627,073	34,105	661,178	295,376	282,322	349,796	16,006	44.7
Huron	785,082	14,428	799,510	554,226	537,325	153,262	92,022	69.3
Bruce	785,827	23,573	809,400	452,162	438,668	268,583	88,705	55.9
Totals	2,197,982	72,106	2,270,088	1,301,764	1,258,315	771,591	196,733	57.3
Grey	1,028,252	30,604	1,058,856	551,648	543,648	342,928	164,280	52.1
Simcoe	909,345	56,020	965,365	475,507	464,862	444,831	45,027	49.3
Totals	1,937,597	86,624	2,024,221	1,027,155	1,008,510	787,759	209,307	50.7
Middlesex	749,387	8,770	758,157	528,082	522,646	216,518	13,557	69.7
Oxford	469,422	2,808	472,230	343,550	338,861	101,059	27,621	72.8
Brant	212,877	2,530	215,407	172,562	168,940	24,158	18,687	80.1
Perth	512,064	6,140	518,204	363,787	356,591	91,946	62,471	70.2
Wellington	622,245	4,555	626,800	440,667	434,573	97,292	88,841	70.3
Waterloo	300,242	5,909	306,151	234,979	231,119	54,035	17,137	76.8
Dufferin	337,914	15,667	353,581	187,977	181,925	78,342	87,262	53.2
Totals	3,204,151	46,379	3,250,530	2,271,604	2,234,655	663,350	315,576	69.9
Lincoln	184,784	5,734	190,518	147,542	148,874	39,812	3,164	77.4
Wentworth	270,049	2,610	272,659	207,559	206,038	42,062	23,038	76.1
Halton	223,301	1,080	224,381	165,388	164,752	45,433	13,560	73.7
Peel	287,509	148	287,657	238,290	240,142	33,345	16,022	82.8
York	529,905	7,167	537,072	407,599	408,864	79,221	50,252	75.9
Ontario	486,875	13,959	500,834	335,463	334,976	98,911	66,460	67.0
Durham	366,098	2,238	368,336	273,509	275,683	67,851	26,976	74.3
Northumberland	431,008	5,673	436,681	313,987	310,854	92,404	30,290	71.9
Prince Edward	228,711	2,688	231,399	181,481	182,902	39,618	10,300	78.4
Totals	3,008,240	41,297	3,049,537	2,270,818	2,273,085	538,657	240,062	74.5
Lennox & Addington	401,440	11,390	412,830	206,312	201,029	128,375	78,143	50.0
Frontenac	573,488	105,114	678,602	214,396	211,457	294,093	170,113	31.6
Leeds & Grenville	738,189	5,774	743,963	417,175	412,241	198,207	128,581	56.1
Dundas	234,175	2,525	236,700	134,166	132,911	60,814	41,720	56.7
Stormont	240,250	7,050	247,300	115,779	116,058	122,077	9,444	46.8
Glengarry	288,524	150	288,674	146,322	141,945	124,142	18,210	50.7
Prescott	259,249	26,397	285,646	137,127	129,672	123,141	25,378	48.0
Russell	222,170	29,129	251,299	75,548	75,432	171,911	3,840	30.1
Carleton	547,196	15,530	562,726	285,941	275,744	161,213	115,572	50.8
Renfrew	862,348	38,534	900,882	262,561	259,775	557,386	80,935	29.2
Lanark	630,289	38,116	668,405	289,102	289,648	248,363	130,940	43.3
Totals	4,997,318	279,709	5,277,027	2,284,429	2,245,912	2,189,722	802,876	43.3
Victoria	504,915	63,320	568,235	238,282	239,067	200,343	129,610	41.9
Peterborough	511,655	34,773	546,428	221,723	215,080	271,091	53,614	40.6
Haliburton	535,795	21,398	557,193	29,695	28,013	498,853	28,645	5.3
Hastings	910,798	74,010	984,808	334,750	344,466	542,383	107,675	34.0
Totals	2,463,163	193,501	2,656,664	824,450	826,626	1,512,670	319,544	31.0
Muskoka	439,798	74,835	514,633	52,686	52,072	403,385	58,562	10.2
Parry Sound	317,068	25,420	342,488	33,727	29,642	282,198	26,563	9.8
*Algoma	307,462	77,160	384,622	40,969	38,194	287,759	55,894	10.6
†Nipissing	139,608	25,958	165,566	10,722	9,806	147,411	7,433	6.5
Totals	1,203,936	203,373	1,407,309	138,104	129,714	1,120,753	148,452	9.8
The Province. 1889	21,294,019	984,619	22,278,638	11,485,108	.....	8,451,181	2,342,349	51.5
1888	20,871,342	1,236,849	22,108,181	.....	11,311,277	8,663,293	2,233,611	51.2

*Not including the acreages of Burpee, Jocelyn, Keewatin, Neebing, Rat Portage and Shuniah.
†Not including the townships of Calvin and McKim.

AREA AND PRODUCE—FALL WHEAT.

TABLE No. VIII.—Showing by County Municipalities and groups of Counties the area and produce of Fall Wheat in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9; also the yield per acre.

Counties.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Essex	29,302	460,041	15.7	30,029	669,647	22.3	31,774	631,927	19.9
Kent	57,542	840,113	14.6	58,276	1,188,830	20.4	60,613	1,183,879	19.5
Elgin	38,603	629,229	16.3	43,391	763,682	17.6	43,977	844,576	19.2
Norfolk	31,536	460,426	14.6	33,286	515,933	15.5	32,998	580,682	17.6
Haldimand	33,409	481,090	14.4	32,682	359,502	11.0	33,138	538,853	16.3
Welland	19,082	284,322	14.9	22,172	268,281	12.1	22,478	360,380	16.0
Totals	209,474	3,155,221	15.1	219,836	3,765,875	17.1	224,978	4,140,297	18.4
Lambton	36,535	610,135	16.7	38,829	698,922	18.0	35,004	664,745	19.0
Huron	53,582	723,357	13.5	55,849	921,509	16.5	67,574	1,310,672	19.4
Bruce	37,084	478,384	12.9	39,302	660,274	16.8	48,481	922,695	19.0
Totals	127,201	1,811,876	14.2	133,980	2,280,705	17.0	151,059	2,898,112	19.2
Grey	25,426	333,081	13.1	23,578	440,909	18.7	27,580	537,600	19.5
Simcoe	56,082	1,003,868	17.9	49,502	990,040	20.0	54,342	1,137,219	20.9
Totals	81,508	1,336,949	16.4	73,080	1,430,949	19.6	81,922	1,674,819	20.4
Middlesex	59,411	879,283	14.8	69,013	1,131,813	16.4	72,930	1,412,854	19.4
Oxford	34,286	582,862	17.0	38,933	689,114	17.7	38,961	765,317	19.6
Brant	21,437	342,992	16.0	25,550	319,375	12.5	29,713	541,511	18.2
Perth	39,474	528,952	13.4	39,920	626,744	15.7	45,520	887,558	19.5
Wellington	16,672	253,414	15.2	19,382	329,494	17.0	26,515	527,201	19.9
Waterloo	36,128	610,563	16.9	36,115	617,567	17.1	39,821	814,217	20.4
Dufferin	4,747	66,933	14.1	7,426	115,103	15.5	10,587	203,294	19.2
Totals	212,155	3,264,999	15.4	236,339	3,829,210	16.2	264,047	5,151,952	19.5
Lincoln	18,764	335,876	17.9	19,113	160,549	8.4	21,646	390,868	18.0
Wentworth	23,679	367,025	15.5	27,409	246,681	9.0	30,817	568,073	18.4
Halton	20,415	453,213	22.2	17,188	183,912	10.7	22,061	432,637	19.6
Peel	22,804	433,276	19.0	19,938	299,070	15.0	26,536	566,696	21.4
York	29,855	638,897	21.4	26,513	524,957	19.8	37,090	815,861	22.0
Ontario	5,307	93,934	17.7	4,682	107,218	22.9	9,596	211,781	22 1
Durham	5,603	85,166	15.2	3,152	69,659	22.9	3,598	72,229	20.1
Northumberland	17,960	237,072	13.2	11,920	267,008	22.4	11,099	225,092	20.3
Prince Edward	1,863	41,918	22.5	1,148	21,238	18.5	2,091	35,453	17.0
Totals	146,250	2,686,377	18.4	131,063	1,880,292	14.3	164,534	3,318,090	20.2
Lennox and Addington	2,649	49,536	18.7	1,615	21,803	13.5	2,081	36,195	17.4
Frontenac	947	15,247	16.1	746	12,757	17.1	1,775	33,141	18.4
Leeds and Grenville	3,790	68,220	18.0	2,997	59,341	19.8	5,151	95,289	18.7
Dundas	353	7,237	20.5	157	3,737	23.8	1,118	20,153	18.5
Stormont	138	2,470	17.9	150	4,170	27.8	672	12,278	18.0
Glengarry	104	1,872	18.0	129	3,548	27.5	602	9,902	16.3
Prescott				55	825	15.0	74	924	12.4
Russell	265	4,240	16.0	165	3,465	21.0	232	4,081	17.5
Carleton	373	6,677	17.9	344	6,605	19.2	1,503	22,139	14.6
Renfrew	214	5,050	23.6	153	2,678	17.5	956	16,877	17.7
Lanark	3,682	70,810	19.2	1,525	32,483	21.3	3,203	62,113	19.4
Totals	12,521	231,359	18.5	8,036	151,412	18.8	17,367	313,092	18.0
Victoria	5,592	76,610	13.7	6,084	139,932	23.0	8,592	170,407	19.8
Peterborough	13,495	160,591	11.9	9,763	192,331	19.7	10,416	206,714	19.8
Haliburton	225	3,218	14.3	177	3,434	19.4	116	1,880	16.2
Hastings	13,017	264,245	20.3	7,280	143,416	19.7	8,759	171,379	19.6
Totals	32,329	504,664	15.6	23,304	479,113	20.6	27,883	550,380	19.7
Muskoka	106	1,855	17.5	110	1,837	16.7	69	1,204	17.4
Parry Sound	30	450	15.0				34	622	18.3
Algoma	541	8,115	15.0	789	11,394	14.4	407	7,992	19.6
Totals	677	10,420	15.4	899	13,231	14.7	510	9,818	19.3
The Province	822,115	13,001,865	15.8	826,537	13,830,787	16.7	932,300	18,056,560	19.4

AREA AND PRODUCE—SPRING WHEAT.

TABLE No. IX.—Showing by County Municipalities and groups of Counties the area and produce of Spring Wheat in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9; also the yield per acre.

Counties.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Essex	679	8,963	13.2	638	11,484	18.0	1,517	23,315	15.4
Kent	2,149	37,608	17.5	2,062	37,735	18.3	2,684	43,535	16.2
Elgin	491	7,414	15.1	492	8,512	17.3	1,726	26,365	15.3
Norfolk	440	6,028	13.7	404	5,893	14.6	830	11,903	14.3
Haldimand	1,894	23,107	12.2	1,941	34,744	17.9	2,775	39,083	14.1
Welland	258	2,683	10.4	285	4,190	14.7	1,498	20,993	14.0
Totals	5,911	85,803	14.5	5,822	102,558	17.6	11,030	165,194	15.0
Lambton	1,714	22,796	13.3	1,711	27,034	15.8	6,210	90,054	14 5
Huron	2,235	29,279	13.1	2,041	28,778	14.1	17,385	231,126	13.3
Bruce	8,017	97,006	12.1	7,458	117,836	15.8	13,419	184,433	13.7
Totals	11,966	149,081	12.5	11,210	173,648	15.5	37,014	505,613	13.7
Grey	23,116	286,638	12.4	21,911	354,958	16.2	41,279	578,415	14.0
Simcoe	30,898	451,111	14.6	28,217	482,511	17.1	34,740	533,701	15.4
Totals	54,014	737,749	13.7	50,128	837,469	16.7	76,019	1,112,116	14.6
Middlesex	1,216	18,483	15.2	1,322	19,169	14.5	11,181	168,591	15.1
Oxford	1,543	25,151	16.3	1,495	23,023	15.4	9,448	152,232	16.1
Brant	53	832	15.7	47	602	12.8	1,170	15,730	13.4
Perth	1,853	31,872	17.2	1,875	21,938	11.7	12,424	180,000	14.5
Wellington	8,103	123,166	15.2	7,139	115,652	16.2	19,935	284,032	14.2
Waterloo	361	5,776	16.0	351	7,020	20.0	5,070	74,110	14.6
Dufferin	19,077	221,293	11.6	17,249	298,408	17.3	20,260	285,783	14.1
Totals	32,206	426,573	13.2	29,478	485,812	16.5	79,488	1,160,478	14.6
Lincoln	888	11,810	13.3	885	16,373	18.5	2,081	31,224	15.0
Wentworth	907	11,700	12.9	848	13,653	16.1	2,422	36,449	15.0
Halton	2,540	42,672	16.8	2,182	44,513	20.4	3,343	51,490	15.4
Peel	8,822	140,270	15.9	7,877	172,506	21.9	12,116	203,454	16.8
York	20,524	320,174	15.6	18,934	426,015	22.5	25,580	444,388	17.4
Ontario	41,582	681,945	16.4	37,871	829,375	21.9	46,400	820,736	17.7
Durham	25,507	390,257	15.3	20,873	404,936	19.4	36,647	613,571	16.7
Northumberland	18,190	203,728	11.2	17,660	243,708	13.8	27,394	387,145	14.1
Prince Edward	3,716	39,390	10.6	3,450	52,440	15.2	6,500	89,429	13.8
Totals	122,676	1,841,946	15.0	110,580	2,203,519	19.9	162,483	2,677,886	16.5
Lennox and Addington	2,689	35,495	13.2	2,626	33,875	12.9	5,902	88,275	15.0
Frontenac	8,536	92,189	10.8	7,970	127,520	16.0	8,636	131,430	15.2
Leeds and Grenville	10,731	123,407	11.5	10,230	184,140	18.0	13,158	214,284	16.3
Dundas	3,811	51,449	13.5	3,941	93,796	23.8	4,627	89,515	19.3
Stormont	4,657	58,213	12.5	4,552	100,144	22.0	4,528	82,729	18.3
Glengarry	7,589	103,969	13.7	7,627	138,811	18.2	7,890	131,837	16.7
Prescott	7,904	81,411	10.3	7,984	160,478	20.1	8,113	129,527	16.0
Russell	3,469	48,219	13.9	3,114	61,346	19.7	4,099	69,908	17.1
Carleton	19,223	349,859	18.2	17,287	376,857	21.8	21,379	378,612	17.7
Renfrew	23,446	459,542	19.6	21,629	311,458	14.4	24,201	408,850	16.9
Lanark	14,443	155,384	10.8	13,664	215,891	15.8	14,314	218,663	15.3
Totals	106,498	1,559,737	14.6	100,624	1,804,316	17.9	116,847	1,943,630	16.6
Victoria	25,336	364,838	14.4	22,581	359,038	15.9	31,619	477,095	15.1
Peterborough	22,515	279,186	12.4	20,983	249,698	11.9	25,228	343,800	13.6
Haliburton	1,291	20,398	15.8	1,163	18,608	16.0	1,294	17,103	13.2
Hastings	9,740	117,854	12.1	9,365	114,253	12.2	15,402	237,495	15.4
Totals	58,882	782,276	13.3	54,092	741,597	13.7	73,543	1,075,493	14.6
Muskoka	886	12,050	13.6	863	12,600	14.6	1,392	20,714	14.9
Parry Sound	569	7,454	13.1	551	6,502	11.8	1,414	23,216	16.4
Algoma	5,022	95,038	19.0	4,502	85,538	19.0	6,155	119,978	19.5
Totals	6,457	114,542	17.7	5,916	104,640	17.7	8,961	163,908	18.3
The Province	398,610	5,697,707	14.3	367,850	6,453,559	17.5	565,385	8,804,318	15.6

AREA AND PRODUCE—BARLEY.

TABLE No. X.—Showing by County Municipalities and groups of Counties the area and produce of Barley in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9; also the yield per acre.

Counties.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Essex	4,289	103,365	24.1	4,148	124,025	29.9	2,754	75,062	27.3
Kent	8,985	252,479	28.1	8,740	271,814	31.1	6,484	178,364	27.5
Elgin	4 327	113,800	26.3	4,545	150,894	33.2	4,397	120,960	27.5
Norfolk	6,418	140,554	21.9	6,735	200,030	29.7	6,181	160,553	26.0
Haldimand	13,014	287,609	22.1	13,334	409,354	30.7	14,401	331,995	23.1
Welland	3,037	67,118	22.1	2,917	87,510	30.0	3,824	91,581	23.9
Totals	40,070	964,925	24.1	40,419	1,243,627	30.8	38,041	958,515	25.2
Lambton	15,331	389,407	25.4	14,957	526,486	35.2	14,584	387,176	26.5
Huron	32,886	861,613	26.2	31,652	902,082	28.5	27,336	757,750	27.7
Bruce	21,691	483,709	22.3	23,249	597,499	25.7	19,419	502,371	25.9
Totals	69,908	1,734,729	24.8	69,858	2,026,067	29.0	61,339	1,647,297	26.9
Grey	20,142	443,124	22.0	21,247	471,683	22.2	23,346	571,538	24.5
Simcoe	40,301	1,092,157	27.1	41,893	930,025	22.2	31,410	816,671	26.0
Totals	60,443	1,535,281	25.4	63,140	1,401,708	22.2	54,756	1,388,209	25.4
Middlesex	16,433	404,252	24.6	15,970	517,428	32.4	15,096	402,656	26.7
Oxford	18,557	519,596	28.0	19,151	643,474	33.6	17,079	513,778	30.1
Brant	25,298	715,933	28.3	25,554	720,623	28.2	18,652	514,581	27.6
Perth	17,728	540,704	30.5	17,380	583,968	33.6	17,628	522,891	29.7
Wellington	43,289	1,320,315	30.5	44,082	1,282,786	29.1	35,998	1,019,802	28.3
Waterloo	21,268	686,956	32.3	21,037	685,806	32.6	16,573	510,269	30.8
Dufferin	14,307	346,229	24.2	15,140	398,182	26.3	11,965	304,926	25.5
Totals	156,880	4,533,985	28.9	158,314	4,832,267	30.5	132,991	3,788,903	28.5
Lincoln	5,103	116,859	22.9	4,860	141,912	29.2	4,346	110,460	25.4
Wentworth	17,238	436,121	25.3	15,657	541,732	34.6	13,036	369,285	28.3
Halton	16,067	485,223	30.2	16 345	495,254	30.3	13,341	379,040	28.4
Peel	45,932	1,336,621	29.1	46,443	1,277,183	27.5	35,592	996,458	28.0
York	69,073	2,155,078	31.2	72,328	2,307,263	31.9	58,018	1,714,907	29.6
Ontario	49,535	1,466,236	29.6	51,815	1,595,902	30.8	39,537	1,145,353	29.0
Durham	54,724	1,532,272	28.0	61,557	1,520,458	24.7	47,780	1,305,325	27.3
Northumberland	51,234	1,168,135	22.8	53,202	915,074	17.2	46,597	1,058,473	22.7
Prince Edward	43,772	1,063,660	24.3	44,894	852,986	19.0	41,283	853,770	20.7
Totals	352,678	9,760,205	27.7	367,101	9,647,764	26.3	299,530	7,933,071	26.5
Lennox and Addington	38,464	950,061	24.7	37,056	618,835	16.7	40,500	902,331	22.3
Frontenac	20,499	412,030	20.1	19,541	363,463	18.6	18,634	428,147	23.0
Leeds & Grenville	10,795	249,365	23.1	10,806	280,956	26.0	11,039	278,649	25.2
Dundas	5,741	136,636	23.8	5,628	192,478	34.2	6,767	203,486	30.1
Stormont	1,935	49,343	25.5	1,989	55,692	28.0	2,289	64,154	28.0
Glengarry	2,591	58,298	22.5	2,641	62,592	23.7	2,213	51,182	23.1
Prescott	4,233	108,788	25.7	4,158	139,709	33.6	2,774	75,722	27.3
Russell	1,849	52,881	28.6	1,754	35,080	20.0	1,455	35,992	24.7
Carleton	9,418	271,238	28.8	9,475	297,515	31.4	7,875	231,160	29.4
Renfrew	2,045	64,009	31.3	2,047	34,390	16.8	1,443	35,776	24.8
Lanark	3,975	109,313	27.5	3,863	90,781	23.5	2,847	75,780	26.6
Totals	101,545	2,461,962	24.2	98,958	2,171,491	21.9	97,836	2,382,379	24.4
Victoria	37,176	1,003,752	27.0	39,298	990,310	25.2	31,280	795,573	25.4
Peterborough	14,834	375,300	25.3	15,168	309,427	20.4	13,957	340,237	24.4
Haliburton	274	6,987	25.5	258	5,547	21.5	278	6,725	24.2
Hastings	39,988	975,707	24.4	41,438	704,446	17.0	40,493	936,549	23.1
Totals	92,272	2,361,746	25.6	96,162	2,009,730	20.9	86,008	2,079,084	24.2
Muskoka	451	9,381	20.8	449	9,698	21.6	531	11,536	21.7
Parry Sound	474	10,049	21.2	463	7,177	15.5	649	14,860	22.9
Algoma	565	14,125	25.0	568	17,040	30 0	564	15,076	26.7
Totals	1,490	33,555	22.5	1,480	33,915	22.9	1,744	41,472	23.8
The Province	875,286	23,386,388	26.7	895,432	23,366,569	26.1	772,245	20,218,930	26.2

AREA AND PRODUCE—OATS.

TABLE No. XI.—Showing by County Municipalities and groups of Counties the area and produce of Oats in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9; also the yield per acre.

Counties.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Essex	33,899	1,159,346	34.2	34,876	1.628,709	46.7	29,272	1,167,097	39.9
Kent	36,066	1,395,754	38.7	34,813	1,528,291	43.9	32,618	1,338,649	41.0
Elgin	35,743	1,179,519	33.0	35,815	1,651,072	46.1	32,415	1,260,025	38.9
Norfolk	28,541	713,525	25.0	28,829	1,072.439	37.2	26,710	878,535	32.9
Haldimand	27,905	798,083	28.6	26,729	1,165,384	43 6	22,717	777,033	34.2
Welland	22,810	670,614	29.4	22,017	854,260	38.8	19,540	637,023	32.6
Totals	184,964	5,916,841	32.0	183,079	7,900,155	43.2	163.272	6,058,362	37.1
Lambton	46,396	1,503,230	32.4	45,397	2,033,786	44.8	39,172	1,470,521	37.5
Huron	95,918	3,194,669	33.3	92,407	3,456,022	37.4	76,667	2,848,852	37.2
Bruce	75,463	1,939,399	25.7	73,123	2,281,438	31.2	59,598	1,940,007	32.6
Totals	217,777	6,636,698	30.5	210,927	7,771,246	36.8	175,437	6,259,380	35.7
Grey	114,396	3,409,001	29.8	108,125	3,059,938	28.3	87,255	2,778,022	31.8
Simcoe	78,390	2,884,752	36.8	74,728	2,256,786	30.2	63,225	2,178,664	34.5
Totals	192,786	6,293,753	32.6	182,853	5,316,724	29.1	150,480	4,956,686	32.9
Middlesex	87,854	3,074,890	35.0	85,378	3,654,178	42.8	72,110	2,802,026	38.9
Oxford	62,828	2,293,222	36.5	60,470	2,515,552	41.6	52,583	2,061,062	39.2
Brant	19,184	671,440	35.0	18,553	718,001	38.7	17,946	668,066	37.2
Perth	68,184	2,706,905	39.7	66,327	2,997,980	45.2	55,623	2,295,637	41.3
Wellington	88,695	3,538,931	39.9	85,120	3,123,904	36.7	69,903	2,601,654	37.2
Waterloo	40,464	1,513,354	37.4	40,997	1,619,382	39.5	34,884	1,339,706	38.4
Dufferin	35,410	1,193,317	33.7	34,921	1,302,553	37.3	28,693	1,005,009	35.0
Totals	402,619	14,992,059	37 2	391,766	15,931,550	40.7	331,742	12,773,160	38.5
Lincoln	17,467	534,490	30.6	18,101	762,052	42.1	17,513	604,300	34.5
Wentworth	32,400	949,320	29.3	30,595	1,333,942	43.6	28,629	1,068,910	37.3
Halton	21,926	835,381	38.1	20,902	800,547	38.3	18,615	689,785	37.1
Peel	36,319	1,430,969	39.4	35,399	1,384,101	39.1	28,877	1,103,014	38.2
York	72,099	2,912,800	40.4	70,478	3,129,223	44.4	62,074	2,540,561	40.9
Ontario	59,267	2,441,800	41.2	57,485	2,443,113	42.5	48,593	1,907,067	39.2
Durham	37,726	1,331,728	35.3	36,950	1,296,945	35.1	33,443	1,219,811	36.5
Northumberland	34,088	1,032,866	30.3	33,031	832,381	25.2	29,797	899,299	30.2
Prince Edward	13,592	400,964	29.5	12,896	366,246	28.4	13,456	376,510	28.0
Totals	324,884	11,870,318	36.5	315,837	12,348,550	39.1	280,997	10,409,257	37.0
Lennox and Addington	24,704	741,120	30.0	22,458	471,618	21.0	22.059	637,535	28.9
Frontenac	33,104	923,602	27.9	30,177	724,248	24.0	27,376	788,744	28.8
Leeds & Grenville	76,443	2,232,136	29.2	72,527	2,357,128	32.5	64,948	2,109,554	32.5
Dundas	33,947	977,674	28.8	33,184	1,317,405	39.7	29,517	1,070,483	36.3
Stormont	24,727	712,138	28.8	24,171	867,739	35.9	24,361	852,814	35.0
Glengarry	31.651	870,403	27.5	31,431	880,068	28 0	30,128	982,911	32.6
Prescott	28,427	770,372	27.1	26,617	910,301	34.2	25,875	816,945	31.6
Russell	18,900	553,770	29 3	18,261	536,873	29.4	18,005	581,182	32.3
Carleton	70,851	2,160,956	30.5	70,851	2,295,572	32.4	59,794	2,110,495	35.3
Renfrew	50,287	1,971,250	39.2	46,390	983,468	21.2	40,493	1,311,905	32.4
Lanark	44,446	1,257,822	28.3	40,739	953,293	23.4	36,624	1,144,430	31.2
Totals	437,487	13,171,243	30.1	416,806	12,297,713	29.5	379,180	12,406,998	32.7
Victoria	48,058	1,691,642	35.2	45,338	1,400,944	30.9	38,457	1,292,020	33.6
Peterborough	36,528	1,220,035	33.4	33,147	818,731	24.7	29,699	941,979	31.7
Haliburtou	6,822	216,940	31.8	6,107	123,972	20.3	5,046	139,094	27.6
Hastings	47,662	1,601,443	33.6	42,939	944,658	22.0	41,781	1,247,743	29.9
Totals	139,070	4,730,060	34.0	127,531	3,288,305	25.8	114,983	3,620,836	31.5
Muskoka	11,414	342,420	30.0	10,137	249,370	24.6	8,692	254,380	29.3
Parry Sound	6,036	164,179	27.2	5,361	140,458	26.2	4,599	142,994	31.1
Algoma	6,407	228,730	35.7	5,571	222,840	40.0	4,249	158,982	37.4
Totals	23,857	735,329	30 8	21,069	612,668	29.1	17,540	556,356	31.7
The Province	1,923,444	64,346,301	33.5	1,849,868	65,466,911	35.4	1,613,631	57,041,035	35.3

AREA AND PRODUCE—RYE.

TABLE No. XII.—Showing by County Municipalities and groups of Counties the area and produce of Rye in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9; also the yield per acre.

Counties.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Essex	845	15,844	18.8	837	20,004	23.9	796	16,488	20.7
Kent	805	17,732	22.0	813	18,536	22.8	644	13,814	21.5
Elgin	1,834	35,396	19.3	1,959	42,314	21.6	1,338	24,264	18.1
Norfolk	8,559	76,851	9.0	8,886	141,287	15.9	7,482	103,918	13.9
Haldimand	477	4,675	9.8	553	8,516	15.4	839	13,786	16.4
Welland	641	10,641	16.6	646	11,111	17.2	664	11,472	17.3
Totals	13,142	161,139	12.3	13,694	241,768	17.7	11,763	183,692	15.6
Lambton	312	5,538	17.8	316	5,530	17.5	223	3,676	16.5
Huron	232	3,480	15.0	236	3,540	15.0	266	4,657	17.5
Bruce	437	8,740	20.0	456	11,400	25.0	396	7,045	17.8
Totals	981	17,758	18.1	1,008	20,470	20.3	885	15,378	17.4
Grey	403	8,181	20.3	361	8,411	23.3	517	9,434	18.2
Simcoe	2,500	44,000	17.6	2,465	39,440	16.0	2,290	42,015	18.3
Totals	2,903	52,181	18.0	2,826	47,851	16.9	2,807	51,449	18.3
Middlesex	553	9,290	16.8	579	10,827	18.7	473	8,156	17.2
Oxford	1,539	26,625	17.3	1,643	28,424	17.3	1,205	18,678	15.5
Brant	1,596	18,354	11.5	1,596	28,888	18.1	1,031	15,056	14.6
Perth	44	880	20.0	45	675	15.0	204	3,009	14.8
Wellington	935	15,147	16.2	937	19,677	21.0	847	15,156	17.9
Waterloo	453	4,892	10.8	471	9,420	20.0	528	9,112	17.3
Dufferin	329	3,455	10.5	326	9,780	30.0	755	13,546	17.9
Totals	5,449	78,543	14.4	5,597	107,691	19.2	5,043	82,713	16.4
Lincoln	139	2,349	16.9	143	2,231	15.6	411	6,502	15.8
Wentworth	1,186	17,078	14.4	1,118	21,130	18.9	982	16,867	17.2
Halton	415	8,399	20.0	454	7,409	16.3	485	8,306	17.1
Peel	955	14,325	15.0	969	19,380	26.0	1,365	26,975	19.8
York	1,326	27,846	21.0	1,331	25,688	19.3	1,743	28,783	16.5
Ontario	1,776	29,837	16.8	1,833	34,827	19.0	2,785	49,347	17.7
Durham	3,917	65,414	16.7	3,871	60,775	15.7	4,968	76,142	15.3
Northumberland	10,795	137,097	12.7	10,044	125,175	12.5	11,308	153,110	13.5
Prince Edward	10,039	156,508	15.6	8,647	115,870	13.4	9,231	129,114	14.0
Totals	30,548	458,854	15.0	28,380	412,476	14.5	33,278	495,146	14.9
Lennox and Addington	4,103	61,955	15.1	3,233	37,503	11.6	5,126	76,118	14.8
Frontenac	3,229	54,570	16.9	2,820	39,480	14.0	3,728	62,010	16.6
Leeds and Grenville	1,780	31,862	17.9	1,749	23,262	13.3	6,230	109,946	17.6
Dundas	897	17,940	20.0	981	15,696	16.0	1,426	32,263	22.6
Stormont	240	4,200	17.5	246	4,800	20.0	471	9,791	20.8
Glengarry				18	270	15.0	51	901	17.7
Prescott	183	3,349	18.3	173	3,495	20.2	277	5,142	18.6
Russell	12	236	19.7	12	360	30.0	204	4,002	19.6
Carleton	3,808	81,110	21.3	3,326	56,209	16.9	6,132	111,035	18.1
Renfrew	5,312	126,957	23.9	4,305	63,714	14.8	6,481	128,746	19.9
Lanark	2,508	43,639	17.4	2,129	25,548	12.0	4,679	88,552	18.9
Totals	22,072	425,818	19.3	18,986	270,337	14.2	34,805	628,506	18.1
Victoria	1,240	24,056	19.4	1,023	20,460	20.0	1,159	19,893	17.2
Peterborough	2,295	27,999	12.2	2,073	32,132	15.5	3,130	49,198	15.7
Haliburton	141	2,657	18.7	122	1,867	15.3	248	4,187	16.9
Hastings	10,398	165,328	15.9	9,479	126,071	13.3	14,122	218,388	15.5
Totals	14,074	220,020	15.6	12,697	180,530	14.2	18,659	291,666	15.6
Muskoka	290	4,437	15.3	277	4,377	15.8	388	7,427	19.1
Parry Sound	141	3,215	22.8	150	2,250	15.0	343	7,147	20.8
Algoma	506	9,614	19.0	472	7,552	16.0	208	3,643	17.5
Totals	937	17,266	18.4	899	14,179	15.8	939	18,217	19.4
The Province	90,106	1,431,679	15.9	84,087	1,295,302	15.4	108,179	1,766,767	16.3

AREA AND PRODUCE—PEASE.

TABLE No XIII.—Showing by County Municipalities and groups of Counties the area and produce of Pease in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9; also the yield per acre.

Counties.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Essex	3,665	59,373	16.2	3,903	91,721	23.5	3,833	71,865	18.7
Kent	14,847	246,460	16.6	15,228	327,402	21.5	10,494	206,404	19.7
Elgin	15,055	230,342	15.3	14,833	370,825	25.0	12,262	230,700	18.8
Norfolk	18,808	376,160	20.0	17,693	431,709	24.4	14,800	291,210	19.7
Haldimand	14,981	247,187	16.5	14,433	362,268	25.1	13,197	247,611	18.8
Welland	4,481	84,243	18.8	4,402	97,724	22.2	4,034	71,267	17.7
Totals	71,837	1,243,765	17.3	70,492	1,681,649	23.9	58,620	1,119,057	19.1
Lambton	12,009	180,135	15.0	11,843	291,338	24.6	9,362	179,480	19.2
Huron	36,290	718,542	19.8	36,002	838,847	23.3	31,479	704,512	22.4
Bruce	40,353	730,389	18.1	40,152	831,146	20.7	36,902	821,794	22.3
Totals	88,652	1,629,066	18.4	87,997	1,961,331	22.3	77,743	1,705,786	21.9
Grey	51,523	1,143,811	22.2	50,168	862,890	17.2	45,653	976,350	21.4
Simcoe	34,542	746,107	21.6	33,023	567,996	17.2	31,361	667,933	21.3
Totals	86,065	1,889,918	22.0	83,191	1,430,886	17.2	77,014	1,643,287	21.3
Middlesex	28,773	417,209	14.5	28,687	708,569	24.7	21,852	425,270	19.5
Oxford	18,841	265,658	14.1	18,364	516,028	28.1	15,249	329,316	21.6
Brant	9,728	230,554	23.7	8,941	213,690	23.9	8,787	176,590	20.1
Perth	28,165	422,475	15.0	27,108	734,627	27.1	22,811	515,058	22.6
Wellington	39,591	779,943	19.7	39,575	933,970	23.6	37,076	837,773	22.6
Waterloo	16,237	298,761	18.4	16,384	439,091	26.8	14,133	315,535	22.3
Dufferin	13,336	282,723	21.2	13,023	272,181	20.9	11,537	240,976	20.9
Totals	154,671	2,697,323	17.4	152,082	3,818,156	25.1	131,445	2,840,518	21.6
Lincoln	5,255	89,861	17.1	5,014	111,812	22.3	4,626	85,044	18.4
Wentworth	13,181	222,759	16.9	12,447	313,664	25.2	10,544	213,440	20.2
Halton	10,297	205,940	20.0	10,704	259,037	24.2	10,247	219,419	21.4
Peel	15,946	279,055	17.5	15,851	369,328	23.3	13,481	276,109	20.5
York	32,240	648,024	20.1	32,016	813,206	25.4	27,785	616,851	22.2
Ontario	28,164	518,218	18.4	28,916	627,477	21.7	26,480	551,492	20.8
Durham	19,989	335,815	16.8	20,671	336,937	16.3	21,417	414,596	19.4
Northumberland	19,056	388,742	20.4	20,895	198,503	9.5	20,152	335,730	16.7
Prince Edward	18,630	340,929	18.3	17,794	249,116	14.0	12,804	217,104	17.0
Totals	162,758	3,029,343	18.6	164,308	3,279,080	20.0	147,536	2,929,785	19.9
Lennox and Addington	8,805	175,220	19.9	8,229	96,279	11.7	8,696	157,964	18.2
Frontenac	9,048	135,720	15.0	9,103	132,904	14.6	10,950	191,936	17.5
Leeds and Grenville	6,388	101,569	15.9	6,369	106,999	16.8	6,374	120,070	18.8
Dundas	1,526	18,770	12.3	1,593	35,843	22.5	1,723	36,316	21.1
Stormont	2,110	18,990	9.0	2,189	54,725	25.0	2,626	52,324	19.9
Glengarry	3,920	47,040	12.0	4,455	77,517	17.4	5,895	104,916	17.8
Prescott	4,306	53,394	12.4	4,855	110,209	22.7	8,880	141,749	16.0
Russell	1,869	28,035	15.0	1,909	30,353	15.9	3,701	71,534	19.3
Carleton	12,047	273,467	22.7	12,120	208,464	17.2	13,100	277,198	21.2
Renfrew	20,695	564,974	27.3	19,074	303,277	15.9	20,551	418,374	20.4
Lanark	11,712	260,006	22.2	11,049	142,532	12.9	11,372	241,010	21.2
Totals	82,426	1,677,185	20 3	80,945	1,299,102	16.0	93,868	1,813,391	19.3
Victoria	15,576	353,575	22.7	15,316	243,524	15.9	15,870	320,925	20.2
Peterborough	14,759	318,794	21.6	14,191	144,748	10.2	14,962	279,002	18.6
Haliburton	1,507	29,839	19.8	1,472	20,608	14.0	1,532	28,988	18.9
Hastings	20,225	420,680	20.8	17,930	191,851	10.7	18,236	313.625	17.2
Totals	52,067	1,122,888	21.6	48,909	600,731	12.3	50,600	942,540	18.6
Muskoka	2,910	61,401	21.1	2,748	51,113	18.6	2,684	54,902	20.5
Parry Sound	1,508	27,446	18.2	1,394	33,140	23.8	1,320	27,959	21.2
Algoma	5,174	130,902	25.3	4,587	114,675	25.0	3,665	94,500	25.8
Totals	9,592	219,749	22.9	8,729	198,928	22.8	7,669	177,361	23.1
The Province	708,068	13,509,237	19.1	696,653	14,269,863	20.5	644,495	13,171,725	20.4

AREA AND PRODUCE—CORN.

TABLE No. XIV.—Showing by County Municipalities and groups of Counties the area and produce of Corn in Ontario in the years 1888 and 1889, with the yearly average for the seven years 1882-9 (1883 not included); also the yield per acre.

Counties.	1889.			1888.			Yearly average for the seven years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Essex	27,893	1,107,352	39.7	35,308	3,273,052	92.7	30,637	2,226,466	72.7
Kent	23,717	1,100,469	46.4	28,994	2,336,916	80.6	25,689	1,792,790	69.8
Elgin	12,503	642,654	51.4	17,128	1,534,669	89.6	14,441	1,048,925	72.6
Norfolk	12,884	663,526	51.5	16,711	1,361,947	81.5	14,030	902,765	64.3
Haldimand	2,582	125,227	48.5	2,898	274,151	94.6	1,953	130,474	66.8
Welland	5,705	260,148	45.6	7,240	623,364	86.1	6,231	389,672	62.5
Totals	85,284	3,899,376	45.7	108,279	9,404,099	86 9	92,981	6,491,092	69.8
Lambton	6,936	255,938	36.9	9,067	719,013	79.3	7,169	428,211	59.8
Huron	1,890	94,500	50.0	1,884	168,806	89.6	1,563	109,299	69.9
Bruce	1,051	52,550	50.0	1,024	61,440	60.0	571	31,942	55.9
Totals	9,877	402,988	40.8	11,975	949,259	79.3	9,294	569,452	61.3
Grey	962	36,556	38.0	822	41,100	50.0	487	23,107	47.4
Simcoe	1,041	59,858	57.5	1,091	78,225	71.7	793	44,199	55.7
Totals	2,003	96,414	48.1	1,913	119,325	62.4	1,280	67,306	52.5
Middlesex	10,815	509,387	47.1	13,830	1,102,251	79.7	10,697	715,504	66.9
Oxford	8,557	365,384	42.7	10,512	791,554	75.3	8,472	524,160	61.9
Brant	5,310	318,600	60 0	6,247	471,409	75.5	4,762	325,493	68.4
Perth	952	33,320	35.0	1,002	82,665	82.5	726	46,286	63.8
Wellington	820	41,150	50.0	778	50,570	65.0	573	33,496	58.5
Waterloo	1,074	64,440	60.0	1,196	80,730	67.5	1,254	81,364	64 9
Dufferin	120	6,000	50 0	119	5,950	50.0	73	3,835	52.5
Totals	27,657	1,338,581	48.4	33,684	2,585,369	76.8	26,557	1,730,138	65.1
Lincoln	6,562	297,259	45 3	8,002	696,174	87.0	6,287	405,889	64.6
Wentworth	4,380	268,932	61.4	4,675	412,805	88.3	4,402	321,477	73.0
Halton	1,660	99,600	60.0	1,639	131,120	80.0	1,160	69,112	59.6
Peel	1,038	84,078	81.0	887	44,350	50.0	526	32,748	62.3
York	1,797	105,664	58 8	1,939	143,486	74.0	1,393	91,192	65.5
Ontario	3,263	154,993	47.5	3,501	277,279	79.2	2,576	150,665	58.5
Durham	2,158	135,954	63.0	2,250	96,975	43.1	1,859	96,674	52.0
Northumberland	4,869	258,057	53.0	5,235	274,314	52.4	3,924	208,889	53.1
Prince Edward	6,115	328,987	53.8	7,169	453,081	63.2	5,808	276,576	47.6
Totals	31,842	1,733,524	54.4	35,297	2,529,582	71.7	27,935	1,652,722	59.2
Lennox and Addington	2,660	187,530	70.5	2,939	160,271	54.7	2,275	121,586	53.4
Frontenac	2,045	104,500	51.1	2,080	112,736	54.2	1,712	88,041	51.4
Leeds and Grenville	7,028	499,691	71 1	7,581	521,573	68.8	5,389	339,529	63.0
Dundas	2,261	104,006	46.0	2,466	164,236	66.6	1,657	105,477	63.7
Stormont	1,152	69,811	60.6	1,347	80,820	60.0	1,232	68,104	55.3
Glengarry	806	52,390	65.0	783	31,320	40.0	718	33,263	46.3
Prescott	1,279	78,147	61.1	1,517	87,976	66.8	1,318	69,785	52.9
Russell	433	19,485	45.0	425	17,040	40.0	411	18,148	44.2
Carleton	1,914	102,590	53.6	1,997	85,565	43.5	1,347	65,743	48.8
Renfrew	454	22,337	49 2	466	13,980	30 0	448	23,157	51.7
Lanark	1,647	86,468	52.5	1,585	61,815	39.0	1,321	62,079	47.0
Totals	21,679	1,326,955	61.2	22,948	1,337,332	58 3	17,828	994,912	55.8
Victoria	930	62,775	67.5	883	70,640	80.0	563	36,948	65.6
Peterborough	423	19,035	45.0	392	15,680	40 0	358	16,872	47.1
Haliburton	68	4,760	70.0	79	3,950	50.0	107	5,393	50.4
Hastings	6,983	347,055	49.7	7,126	406,895	57.1	5,583	278,419	49 9
Totals	8,404	433,625	51.6	8,480	497,165	58.6	6,611	337,632	51.1
Muskoka	200	10,000	50.0	221	6,299	28.5	204	7,862	38.5
Parry Sound	32	1,216	38.0	35	1,400	40.0	33	1,459	44.2
Algoma	138	5,520	40.0	139	6,950	50.0	79	3,566	45.1
Totals	370	16,736	45.2	395	14,649	37.1	316	12,887	40.8
The Province	187,116	9,248,199	49.4	222,973	17,436,780	78.2	182,803	11,856,141	64.9

AREA AND PRODUCE—BUCKWHEAT.

TABLE No. XV.—Showing by County Municipalities and groups of Counties the area and produce of Buckwheat in Ontario in the years 1888 and 1889, with the yearly average for the seven years 1882-9 (1883 not included); also the yield per acre.

Counties.	1889.			1888.			Yearly average for the seven years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Essex	659	9,556	14.5	589	15,785	26.8	597	14,441	24.2
Kent	724	11,222	15.5	719	13,445	18.7	818	17,646	21.6
Elgin	1,105	26,520	24.0	1,123	22,460	20.0	1,226	25,524	20.8
Norfolk	3,791	71,650	18.9	4,107	85,836	20.9	4,599	90,189	19.6
Haldimand	872	17,091	19.6	951	16,928	17.8	758	14,160	18.7
Welland	1,622	28,061	17.3	1,754	35,957	20.5	1,719	32,759	19.1
Totals	8,773	164,100	18.7	9,243	190,411	20.6	9,717	194,719	20.0
Lambton	350	5,880	16.8	361	6,642	18 4	395	8,543	21.6
Huron	136	2,448	18.0	137	2,055	15.0	237	4,404	18.6
Bruce	234	4,680	20.0	241	2,410	10.0	314	5,651	18.0
Totals	720	13,008	18.1	739	11,107	15.0	946	18,598	19.7
Grey	247	3,458	14.0	253	4,175	16.5	317	5,581	17.6
Simcoe	217	4,123	19.0	234	3,510	15.0	319	5,219	16.4
Totals	464	7,581	16.3	487	7,685	15.8	636	10,800	17.0
Middlesex	485	8,730	18.0	444	8,347	18.8	552	9,841	17.8
Oxford	461	8,436	18.3	484	7,260	15.0	596	11,574	19.4
Brant	495	9,257	18.7	532	12,023	22.6	652	13,138	20.2
Perth	63	1,285	20.4	64	960	15.0	111	2,266	20.4
Wellington	121	3,025	25.0	118	2,360	20.0	128	2,906	22.7
Waterloo	46	552	12.0	48	720	15.0	87	1,752	20.1
Dufferin	72	1,188	16.5	69	1,725	25.0	101	1,949	19.3
Totals	1,743	32,473	18.6	1,759	33,395	19.0	2,227	43,426	19.5
Lincoln	527	9,697	18.4	577	12,809	22.2	645	15,438	23.9
Wentworth	582	8,963	15.4	681	18,796	27.6	675	14,929	22.1
Halton	220	3,476	15.8	222	2,220	10.0	178	2,793	15.7
Peel	381	6,706	17.6	381	5,715	15.0	262	4,610	17.6
York	196	3,920	20.0	202	4,545	22.5	264	5,699	21.6
Ontario	474	14,220	30.0	472	11,800	25.0	400	9,750	24.4
Durham	1,874	40,104	21.4	1,788	42,912	24.0	1,205	26,036	21.6
Northumberland	6,679	140,927	21.1	6,105	114,774	18.8	5,376	113,105	21.0
Prince Edward	6,681	116,918	17.5	7,609	232,075	30.5	6,577	148,349	22.6
Totals	17,614	344,931	19.6	18,037	445,646	24.7	15,582	340,709	21.9
Lennox and Addington	2,035	67,969	33.4	2,053	43,934	21.4	2,561	64,094	25.0
Frontenac	1,251	34,903	27.9	1,306	30,169	23.1	1,493	35,733	23.9
Leeds & Grenville	5,156	124,260	24.1	5,020	82,830	16.5	5,241	119,329	22.8
Dundas	1,506	38,704	25.7	1,562	43,736	28.0	1,466	39,589	27.0
Stormont	1,434	37,141	25.9	1,609	37,972	23.6	1,965	51,907	26.4
Glengarry	1,196	26,910	22.5	1,156	23,120	20.0	997	24,174	24.2
Prescott	1,022	27,696	27.1	1,121	26,456	23 6	1,499	32,842	21.9
Russell	616	18,911	30.7	570	12,597	22.1	908	21,681	23.9
Carleton	3,443	109,487	31.8	3,443	57,498	16.7	3,802	83,666	22.0
Renfrew	720	15,120	21.0	935	15,895	17.0	1,060	24,017	22.7
Lanark	3,770	95,758	25.4	3,696	60,245	16.3	5,458	127,424	23.3
Totals	22,149	596,859	26.9	22,471	434,452	19.3	26,450	624,456	23.6
Victoria	478	14,119	29.6	392	5,880	15.0	417	7,412	17.8
Peterborough	461	12,032	26.1	455	9,146	20.1	667	13,912	20.9
Haliburton	173	3,633	21.0	166	2,490	15.0	228	3,438	15.1
Hastings	3,457	75,017	21.7	3,427	76,079	22.2	3,629	85,331	23.5
Totals	4,569	104,831	22.9	4,440	93,595	21.1	4,941	110,093	22.3
Muskoka	269	6,725	25.0	262	4,192	16.0	285	7,654	26.9
Parry Sound	13	390	30.0	13	260	20.0	87	2,065	23.7
Algoma	84	1,680	20.0	77	1,540	20.0	59	1,357	23.0
Totals	366	8,795	24 0	352	5,992	17.0	431	11,076	25.7
The Province	56,398	1,272,578	22.6	57,528	1,222,283	21.2	60,930	1,353,877	22.2

AREA AND PRODUCE—BEANS.

TABLE No. XVI.—Showing by County Municipalities and groups of Counties the area and produce of Beans in Ontario in the years 1888 and 1889, with the yearly average for the seven years 1882-9 (1883 not included); also the yield per acre.

Counties.	1889.			1888.			Yearly average for the seven years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Essex	412	7,004	17.0	405	9,720	24.0	444	10,646	24.0
Kent	12,842	191,346	14.9	13,267	323,715	24.4	11,719	224,308	19.1
Elgin	890	18,868	21.2	955	22,729	23.8	1,026	22,636	22.1
Norfolk	234	5,850	25.0	256	6,400	25.0	564	10,830	19.2
Haldimand	208	2,870	13.8	210	4,473	21.3	151	2,977	19.7
Welland	483	6,424	13.3	507	9,380	18.5	646	10,292	15.9
Totals	15,069	232,362	15.4	15,600	376,417	24.1	14,550	281,689	19.4
Lambton	263	4,077	15.5	264	6,600	25.0	340	6,815	20.6
Huron	133	2,660	20.0	136	4,080	30.0	116	3,086	26 6
Bruce	77	1,925	25.0	78	2,418	31.0	100	1,954	19.5
Totals	473	8,662	18.3	478	13,098	27.4	556	11,855	21.3
Grey	79	1,580	20.0	83	1,378	16.6	103	1,729	16.8
Simcoe	136	2,720	20.0	147	2,058	14.0	109	2,126	19.5
Totals	215	4,300	20.0	230	3,436	14.9	212	3,855	18.2
Middlesex	271	4,770	17.6	253	6,350	25.1	310	5,951	19.2
Oxford	224	4,480	20.0	225	6,300	28.0	221	6,089	27.5
Brant	42	685	16.3	46	1,086	23.6	411	7,462	18.2
Perth	59	1,440	24.4	67	1,675	25.0	61	1,484	24.3
Wellington	49	980	20.0	50	900	18.0	38	726	19.1
Waterloo	29	522	18.0	30	750	25.0	34	702	20.6
Dufferin	21	420	20.0	21	420	20.0	18	390	21.7
Totals	695	13,297	19.1	692	17,481	25.3	1,093	22,804	20.9
Lincoln	160	3,040	19.0	172	4,592	26.7	153	3,216	21.0
Wentworth	94	2,115	22.5	107	3,210	30.0	120	2,601	21.7
Halton	42	840	20.0	43	860	20.0	42	819	19.5
Peel	49	1,225	25.0	56	1,120	20.0	58	1,459	25.2
York	136	2,584	19.0	138	3,312	24.0	137	3,579	26.1
Ontario	90	1,575	17.5	95	2,138	22.5	237	5,441	23.6
Durham	287	3,918	13.7	301	6,321	21.0	305	6,001	19.7
Northumberland	487	8,425	17.3	508	12,598	24.8	502	10,984	21.9
Prince Edward	396	8,910	22.5	462	9,425	20.4	466	9,876	21.2
Totals	1,741	32,632	18.7	1,882	43,576	23.2	2,020	43,976	21.8
Lennox and Addington	79	2,275	28.8	86	2,047	23.8	153	2,993	19.6
Frontenac	237	4,930	20.8	261	5,324	20.4	309	8,143	26.4
Leeds and Grenville	325	5,590	17.2	341	8,116	23.8	359	7,873	21.9
Dundas	406	11,043	27.2	424	8,480	20.0	257	6,254	24.3
Stormont	268	6,030	22.5	270	5,400	20 0	178	4,496	25.3
Glengarry	66	1,485	22.5	69	1,725	25.0	85	2,323	27.2
Prescott	496	10,218	20.6	505	11,767	23.3	498	13,772	27.7
Russell	97	1,843	19.0	109	2,867	26.3	200	4,498	22.5
Carleton	395	8,888	22.5	412	7,292	17.7	443	9,832	22 2
Renfrew	425	12,368	29.1	435	8,048	18.5	448	10,868	24.3
Lanark	205	5,986	29.2	217	5,794	26.7	212	5,269	24.9
Totals	2,999	70,656	23.6	3,129	66,860	21.4	3,142	76,321	24.3
Victoria	61	1,220	20.0	62	1,550	25.0	79	1,531	19.4
Peterborough	46	690	15.0	48	600	12.5	122	1,866	15.3
Haliburton	22	550	25.0	24	480	20.0	25	489	19.6
Hastings	404	5,454	13.5	446	9,232	20.7	302	6,041	20.0
Totals	533	7,914	14.8	580	11,862	20.5	528	9,927	18.8
Muskoka	59	1,180	20.0	64	896	14.0	43	881	20.5
Parry Sound	10	170	17.0	10	200	20.0	12	271	22.6
Algoma	36	720	20.0	35	700	20.0	14	276	19.7
Totals	105	2,070	19.7	109	1,796	16.5	69	1,428	20.7
The Province	21,830	371,893	17.0	22,700	534,526	23.5	22,170	451,855	20.4

AREA AND PRODUCE—HAY AND CLOVER.

TABLE No. XVII.—Showing by County Municipalities and groups of Counties the area and produce of Hay and Clover in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9; also the yield per acre.

Counties.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Tons.	Tons per acre.	Acres.	Tons.	Tons per acre.	Acres.	Tons.	Tons per acre.
Essex	40,911	76,913	1.88	38,163	55,718	1.46	35,914	56,779	1.58
Kent	56,631	102,502	1.81	53,476	66,845	1.25	51,123	77,481	1.52
Elgin	53,624	106,176	1.98	48,882	59,147	1.21	49,198	73,718	1.50
Norfolk	40,804	67,735	1.66	35,919	23,946	.67	40,153	53,766	1.34
Haldimand	50,579	70,811	1.40	47,226	27,863	.59	49,342	63,774	1.29
Welland	54,047	84,313	1.56	47,306	29,803	.63	46,734	62,178	1.33
Totals	296,596	508,450	1.71	270,972	263,322	.97	272,464	387,696	1.42
Lambton	58,919	97,806	1.66	54,104	58,432	1.08	52,880	76,783	1.45
Huron	103,376	165,402	1.60	97,987	94,068	.96	93,336	129,965	1.39
Bruce	94,852	136,587	1.44	91,116	91,116	1.00	82,296	104,188	1.27
Totals	257,147	399,795	1.55	243,207	243,616	1.00	228,512	310,936	1.36
Grey	126,244	181,791	1.44	121,857	104,797	.86	114,120	136,356	1.19
Simcoe	85,031	127,547	1.50	81,761	67,862	.83	75,090	99,599	1.33
Totals	211,275	309,338	1.46	203,618	172,659	.85	189,210	235,955	1.25
Middlesex	94,609	164,620	1.74	90,190	104,629	1.16	88,579	133,481	1.51
Oxford	62,222	106,400	1.71	58,867	68,286	1.16	61,574	92,210	1.50
Brant	29,601	52,394	1.77	26,869	15,315	.57	31,548	44,524	1.41
Perth	69,277	110,843	1.60	67,786	84,055	1.24	66,419	99,460	1.50
Wellington	86,251	131,102	1.52	85,397	78,565	.92	81,768	122,560	1.49
Waterloo	40,874	62,537	1.53	42,182	50,618	1.20	42,157	65,005	1.54
Dufferin	36,528	54,061	1.48	35,259	23,976	.68	33,955	43,177	1.31
Totals	419,362	681,957	1.63	406,550	425,435	1.05	405,100	599,917	1.48
Lincoln	42,595	65,170	1.53	41,221	28,442	.69	41,037	53,626	1.31
Wentworth	44,837	74,878	1.67	42,906	36,899	.86	44,816	63,728	1.42
Halton	32,725	50,397	1.54	31,019	17,060	.55	33,598	45,677	1.36
Peel	38,048	58,213	1.53	35,328	19,184	.56	37,536	53,626	1.43
York	70,636	111,605	1.58	68,379	48,549	.71	71,318	98,334	1.38
Ontario	52,742	85,969	1.63	50,860	37,128	.73	51,871	73,250	1.41
Durham	40,664	68,316	1.68	40,301	28,614	.71	42,911	59,649	1.39
Northumberland	53,635	82,062	1.53	51,821	36,793	.71	52,542	66,776	1.27
Prince Edward	28,755	52,622	1.83	26,036	12,237	.47	29,138	39,041	1.34
Totals	404,637	649,232	1.60	387,871	264,906	.68	404,767	553,707	1.37
Lennox and Add	54,238	78,103	1.44	52,102	26,051	.50	46,486	55,442	1.19
Frontenac	65,369	101,976	1.56	63,775	29,337	.46	61,361	72,091	1.17
Leeds & Grenville	115,716	192,088	1.66	112,019	77,293	.69	109,402	144,344	1.32
Dundas	38,294	65,866	1.72	36,399	49,503	1.36	34,386	54,004	1.57
Stormont	36,585	68,048	1.86	34,482	49,999	1.45	31,752	49,979	1.57
Glengarry	44,309	85,073	1.92	40,781	63,211	1.55	35,700	59,476	1.67
Prescott	35,575	54,786	1.54	36,117	48,036	1.33	31,069	44,679	1.44
Russell	16,879	23,631	1.40	17,119	17,119	1.00	17,514	23,337	1.33
Carleton	58,654	76,837	1.31	61,871	63,727	1.03	57,673	77,626	1.35
Renfrew	67,431	78,894	1.17	68,597	34,299	.50	61,672	66,120	1.07
Lanark	62,619	93,302	1.49	61,151	40,360	.66	59,156	81,470	1.38
Totals	595,669	918,604	1.54	584,413	498,935	.85	546,171	728,568	1.33
Victoria	37,812	50,290	1.33	35,044	23,129	.66	37,128	43,497	1.17
Peterborough	36,941	49,870	1.35	37,811	19,284	.51	37,540	41,988	1.12
Haliburton	10,645	10,432	.98	10,974	9,108	.83	9,895	10,342	1.05
Hastings	71,733	96,122	1.34	69,040	46,947	.68	66,588	82,551	1.24
Totals	157,131	206,714	1.32	152,869	98,468	.64	151,151	178,378	1.18
Muskoka	22,018	24,220	1.10	22,699	22,245	.98	20,407	23,837	1.17
Parry Sound	10,587	13,128	1.24	9,461	6,623	.70	9,084	9,847	1.08
Algoma	11,801	16,875	1.43	10,978	12,808	1.17	9,756	12,236	1.25
Totals	44,406	54,223	1.22	43,138	41,676	.97	39,247	45,920	1.17
The Province	2,386,223	3,728,313	1.56	2,292,638	2,009,017	.88	2,236,622	3,041,077	1.36

AREA AND PRODUCE—POTATOES.

TABLE No. XVIII.—Showing by County Municipalities and groups of Counties the area and produce of Potatoes in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9; also the yield per acre.

Counties.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Essex	2,470	130,910	53.0	2,807	413,190	147.2	2,790	293,750	105.3
Kent	2,588	207,040	80.0	2,988	463,140	155.0	3,338	427,740	128.1
Elgin	2,225	151,968	68.3	2,890	486,098	168.2	2,833	288,620	101.9
Norfolk	2,749	145,422	52.9	3,004	410,046	136.5	3,439	357,542	104.0
Haldimand	1,309	76,184	58.2	1,429	243,216	170.2	1,500	169,202	112.8
Welland	1,954	125,447	64.2	2,238	298,325	133.3	2,380	231,224	97.2
Totals	13,295	836,971	63.0	15,356	2,314,015	150.7	16,280	1,768,078	108.6
Lambton	2,425	136,285	56.2	3,013	454,662	150.9	2,956	306,622	103.7
Huron	4,631	470,973	101.7	5,045	666,949	132.2	5,076	615,370	121.2
Bruce	4,366	441,403	101.1	4,857	757,692	156.0	4,759	546,095	114.7
Totals	11,422	1,048,661	91.8	12,915	1,879,303	145.5	12,791	1,468,087	114.8
Grey	6,304	650,573	103.2	6,779	1,039,899	153.4	6,890	851,386	123.6
Simcoe	6,670	747,040	112.0	6,898	1,122,305	162.7	6,732	855,538	127.1
Totals	12,974	1,397,613	107.7	13,677	2,162,204	158.1	13,622	1,706,924	125.3
Middlesex	4,400	259,600	59.0	5,250	836,325	159.3	5,548	588,077	106.0
Oxford	2,830	208,854	73.8	3,151	605,622	192.2	3,289	363,662	110.6
Brant	2,150	161,250	75.0	2,907	296,842	134.5	2,220	245,435	110.6
Perth	3,146	184,356	58.6	3,599	589,876	163.9	3,760	419,297	111.5
Wellington	5,403	613,781	113.6	6,030	859,878	142.6	5,867	709,150	120.9
Waterloo	2,641	218,411	82.7	2,867	476,782	166.3	2,899	349,729	120.6
Dufferin	2,658	311,783	117.3	3,237	598,845	185.0	3,029	426,796	140.9
Totals	23,228	1,958,035	84.3	26,341	4,264,170	161.9	26,612	3,102,129	116.6
Lincoln	1,605	100,313	62.5	2,004	299,398	149.4	1,924	190,454	99.0
Wentworth	3,007	236,050	78.5	3,402	498,053	146.4	3,490	419,844	120.3
Halton	1,384	123,591	89.3	1,543	241,788	156.7	1,608	183,307	114.0
Peel	2,974	235,541	79.2	3,069	433,650	141.3	2,877	309,525	107.6
York	7,387	785,238	106.3	7,867	1,335,030	169.7	7,546	790,506	104.8
Ontario	4,453	504,970	113.4	4,653	890,119	191.3	4,100	525,652	127.7
Durham	2,982	381,994	128.1	3,119	449,136	144.0	3,141	405,374	129.1
Northumberland	4,417	410,339	92.9	4,596	607,132	132.1	4,292	464,936	108.3
Prince Edward	2,336	150,906	64.6	2,433	328,455	135.0	2,426	228,246	94.1
Totals	30,545	2,928,942	95.9	32,686	5,082,761	155.5	31,404	3,515,844	112.0
Lennox & Addington	2,796	316,787	113.3	2,786	310,810	113.6	3,256	376,686	115.7
Frontenac	4,023	259,081	64.4	4,230	503,793	119.1	4,016	402,009	100.1
Leeds and Grenville	7,323	496,499	67.8	7,375	956,538	129.7	7,280	861,705	118.4
Dundas	2,341	166,913	71.3	2,498	278,027	111.3	2,442	338,961	138.8
Stormont	1,838	87,305	47.5	1,983	255,014	128.6	2,050	248,683	121.3
Glengarry	2,277	100,188	44.0	2,200	297,000	135.0	2,458	280,201	114.0
Prescott	2,309	221,664	96.0	2,205	441,000	200.0	2,399	305,750	127.4
Russell	1,401	128,472	91.7	1,252	109,049	87.1	1,503	150,997	100.5
Carleton	6,475	903,910	139.6	6,132	787,962	128.5	6,044	800,977	132.5
Renfrew	3,790	720,100	190.0	3,535	446,471	126.3	3,765	579,880	154.0
Lanark	3,365	469,418	139.5	3,328	398,029	119.6	3,574	507,591	142.0
Totals	37,938	3,870,337	102.0	37,474	4,783,693	127.7	38,787	4,853,440	125.1
Victoria	3,767	541,695	143.8	3,633	482,099	132.7	3,116	403,460	129.5
Peterborough	2,915	434,044	148.9	2,822	259,342	91.9	2,625	318,070	121.2
Haliburton	654	87,505	133.8	618	66,806	108.1	679	91,898	135.3
Hastings	5,889	717,869	121.9	5,428	630,191	116.1	5,840	706,301	120.9
Totals	13,225	1,781,113	134.7	12,501	1,438,438	115.1	12,260	1,519,729	124.0
Muskoka	1,545	253,844	164.3	1,427	175,949	123.3	1,349	185,240	137.3
Parry Sound	863	136,268	157.9	798	67,032	84.0	720	109,722	152.4
Algoma	777	143,745	185.0	740	106,042	143.3	697	119,535	171.5
Totals	3,185	533,857	167.6	2,965	349,023	117.7	2,766	414,497	149.9
The Province	145,812	14,355,529	98.5	153,915	22,273,607	144.7	154,522	18,348,728	118.7

AREA AND PRODUCE—MANGEL-WURZELS.

TABLE No. XIX.—Showing by County Municipalities and groups of Counties the area and produce of Mangel-wurzels in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9; also the yield per acre.

Counties.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre
Essex	186	29,388	158	195	81,237	417	192	73,347	382
Kent	324	96,228	297	333	137,629	413	279	108,930	390
Elgin	322	104,650	325	363	175,438	483	279	109,117	391
Norfolk	311	101,075	325	323	147,773	458	211	80,885	383
Haldimand	300	79,200	264	307	127,405	415	170	54,927	323
Welland	223	80,949	363	243	128,450	529	156	63,526	407
Totals	1,666	491,490	295	1,764	797,932	452	1,287	490,732	381
Lambton	512	125,440	245	562	301,063	536	389	147,692	380
Huron	1,742	698,542	401	1,685	683,942	406	1,477	655,246	444
Bruce	384	121,344	316	397	148,796	375	407	168,328	414
Totals	2,638	945,326	358	2,644	1,133,801	429	2,273	971,266	427
Grey	308	116,732	379	320	117,184	366	344	154,801	450
Simcoe	462	204,666	443	468	163,800	350	635	254,695	401
Totals	770	321,398	417	788	280,984	357	979	409,496	418
Middlesex	1,622	496,332	306	1,653	848,816	514	1,326	548,668	414
Oxford	1,608	541,896	337	1,705	827,266	485	1,210	555,073	459
Brant	361	108,300	300	365	235,863	646	348	171,088	492
Perth	1,929	590,274	306	1,895	1,051,725	555	1,530	714,591	467
Wellington	1,103	349,651	317	1,111	465,842	419	890	384,390	432
Waterloo	511	80,738	158	518	226,625	438	463	195,390	422
Dufferin	89	32,930	370	95	25,536	269	122	47,013	385
Totals	7,223	2,200,121	305	7,342	3,681,673	502	5,889	2,616,213	444
Lincoln	317	112,218	354	342	164,776	482	249	93,357	375
Wentworth	448	120,512	269	482	266,594	553	430	209,531	487
Halton	447	165,390	370	499	349,300	700	419	192,172	459
Peel	626	183,418	293	611	305,500	500	456	176,027	386
York	1,914	692,868	362	1,951	904,289	464	1,734	786,668	454
Ontario	758	326,698	431	766	481,508	629	759	331,584	437
Durham	467	219,490	470	483	198,851	412	447	193,059	432
Northumberland	486	195,372	402	491	215,893	440	454	191,552	422
Prince Edward	131	20,960	160	129	60,630	470	127	35,532	280
Totals	5,594	2,036,926	364	5,754	2,947,341	512	5,075	2,209,482	435
Lennox and Addington	128	43,520	340	95	34,438	363	135	44,793	332
Frontenac	327	96,138	294	235	75,482	321	191	67,061	351
Leeds and Grenville	315	128,205	407	318	112,636	354	222	93,347	420
Dundas	80	15,520	194	88	41,070	467	105	41,362	394
Stormont	14	4,438	317	14	3,734	267	28	11,075	396
Glengarry	60	22,500	375	55	11,000	200	64	19,862	310
Prescott	117	37,089	317	115	50,600	440	72	25,358	352
Russell	49	22,050	450	48	8,798	183	52	15,951	307
Carleton	449	161,191	359	445	134,969	303	514	188,096	366
Renfrew	85	42,925	505	84	12,180	145	103	36,492	354
Lanark	111	45,843	413	113	33,098	293	138	53,462	387
Totals	1,735	619,419	357	1,610	518,005	322	1,624	596,859	368
Victoria	731	313,599	429	731	414,258	567	517	241,263	467
Peterborough	303	116,655	385	313	97,593	312	288	102,691	357
Haliburton	4	1,044	261	4	600	150	6	2,113	352
Hastings	475	159,125	335	437	134,072	307	297	89,065	300
Totals	1,513	590,423	390	1,485	646,523	435	1,108	435,132	393
Muskoka	38	11,400	300	38	7,600	200	51	12,924	253
Parry Sound	7	1,575	225	7	1,400	200	10	2,164	216
Algoma	27	5,400	200	27	5,400	200	23	6,606	287
Totals	72	18,375	255	72	14,400	200	84	21,694	258
The Province	21,218	7,223,478	341	21,459	10,020,659	467	18,319	7,750,874	423

AREA AND PRODUCE—CARROTS.

TABLE No. XX.—Showing by County Municipalities and groups of Counties the area and produce of Carrots in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9; also the yield per acre.

Counties.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Essex	120	12,600	105	122	24,400	200	87	20,682	238
Kent	164	31,652	193	168	47,561	283	144	39,703	276
Elgin	174	52,722	303	192	69,120	360	147	43,548	296
Norfolk	192	48,000	250	198	66,132	334	135	38,462	285
Haldimand	128	31,232	244	136	43,969	323	88	22,495	256
Welland	104	27,872	268	116	43,918	379	83	23,540	284
Totals	882	204,078	231	932	295,100	317	684	188,430	275
Lambton	253	60,467	239	271	90,053	332	189	54,611	289
Huron	503	157,439	313	510	179,979	353	510	198,036	388
Bruce	291	68,094	234	302	89,815	297	298	96,298	323
Totals	1,047	286,000	273	1,083	359,847	332	997	348,945	350
Grey	456	139,080	305	466	139,800	300	536	196,971	367
Simcoe	559	207,948	372	576	184,608	321	592	212,829	360
Totals	1,015	347,028	342	1,042	324,408	311	1,128	409,800	363
Middlesex	466	123,024	264	484	156,042	322	468	143,606	307
Oxford	449	150,864	336	471	186,940	397	355	142,089	400
Brant	220	61,380	279	222	104,162	469	215	89,123	415
Perth	379	83,759	221	392	135,593	346	416	159,443	383
Wellington	280	65,240	233	300	86,250	288	299	95,632	320
Waterloo	406	131,950	325	417	154,874	371	326	134,506	413
Dufferin	155	48,050	310	151	33,975	225	156	52,608	337
Totals	2,355	664,267	282	2,437	857,836	352	2,235	817,007	366
Lincoln	155	36,580	236	168	67,586	402	119	37,137	312
Wentworth	265	53,000	200	276	99,719	361	227	82,193	362
Halton	156	62,400	400	162	74,520	460	127	50,932	401
Peel	325	94,900	292	324	126,781	391	311	108,501	349
York	689	227,370	330	712	290,710	408	712	293,594	412
Ontario	465	177,165	381	470	249,711	531	516	197,346	382
Durham	582	243,276	418	585	202,059	345	505	189,151	375
Northumberland	394	141,446	359	402	129,404	322	275	92,663	337
Prince Edward	126	18,900	150	125	40,838	327	61	12,095	198
Totals	3,157	1,055,037	334	3,224	1,281,328	397	2,853	1,063,612	373
Lennox and Addington	67	20,770	310	66	20,130	305	59	16,130	273
Frontenac	259	58,534	226	274	58,800	215	172	42,425	247
Leeds and Grenville	188	60,160	320	190	58,900	310	157	49,182	313
Dundas	83	12,782	154	74	24,975	338	52	15,795	304
Stormont	81	24,300	300	86	12,900	150	44	11,847	269
Glengarry	64	13,312	208	62	12,400	200	44	10,345	236
Prescott	50	12,750	255	51	16,544	324	51	13,909	273
Russell	177	55,401	313	173	51,900	300	126	39,327	312
Carleton	565	174,020	308	534	123,407	231	532	173,075	325
Renfrew	90	27,450	305	90	11,250	125	106	31,359	296
Lanark	99	36,630	370	102	27,326	268	129	44,005	341
Totals	1,723	496,109	288	1,702	418,532	246	1,472	447,399	304
Victoria	375	152,250	406	386	166,482	431	304	112,549	370
Peterborough	330	112,530	341	354	100,713	285	325	99,293	306
Haliburton	23	4,623	201	23	5,750	250	19	5,689	299
Hastings	207	61,893	299	198	58,608	296	153	44,556	291
Totals	935	331,296	354	961	331,553	345	801	262,087	327
Muskoka	84	32,844	391	81	17,820	220	75	19,755	263
Parry Sound	25	5,800	232	24	4,560	190	25	6,756	270
Algoma	38	9,500	250	38	7,600	200	30	7,323	244
Totals	147	48,144	328	143	29,980	210	130	33,834	260
The Province	11,261	3,431,959	305	11,524	3,898,584	338	10,300	3,571,114	347

AREA AND PRODUCE—TURNIPS.

TABLE No. XXI.—Showing by County Municipalities and groups of Counties the area and produce of Turnips in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9; also the yield per acre.

Counties.	1889.			1888.			Yearly average for the eight years 1882-9.		
	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.	Acres.	Bushels.	Bush. per acre.
Essex	192	21,696	113	191	38,200	200	202	55,159	273
Kent	285	86,355	303	293	88,867	303	337	113,922	338
Elgin	396	113,256	286	404	164,145	406	351	117,375	334
Norfolk	1,570	436,460	278	1,630	727,306	446	951	357,670	376
Haldimand	266	69,160	260	281	98,350	350	123	34,455	280
Welland	187	52,173	279	199	79,600	400	167	57,540	345
Totals	2,896	779,100	269	2,998	1,196,468	399	2,131	736,121	345
Lambton	379	75,800	200	379	154,708	408	300	94,814	316
Huron	6,685	2,125,830	318	6,739	2,651,123	393	6,663	2,502,651	376
Bruce	5,884	1,776,968	302	6,079	2,355,613	388	5,577	2,139,863	384
Totals	12,948	3,978,598	307	13,197	5,161,444	391	12,540	4,737,328	378
Grey	9,165	2,932,800	320	9,458	3,348,132	354	8,872	3,478,607	392
Simcoe	3,873	1,603,422	414	3,812	1,519,463	399	3,322	1,310,033	394
Totals	13,038	4,536,222	348	13,270	4,867,595	367	12,194	4,788,640	393
Middlesex	1,860	446,400	240	1,989	895,050	450	1,681	600,981	358
Oxford	5,827	1,619,906	278	6,299	3,005,253	477	5,255	2,151,737	409
Brant	3,401	870,656	256	3,513	1,795,494	511	2,617	1,148,165	439
Perth	3,792	963,168	254	4,162	1,763,856	424	4,623	1,707,017	369
Wellington	12,872	4,363,608	339	13,380	5,796,216	433	12,897	5,342,662	414
Waterloo	4,858	1,248,506	257	5,034	2,315,640	460	5,083	1,961,530	386
Dufferin	2,455	927,990	378	2,505	826,650	330	2,338	860,027	368
Totals	35,065	10,440,234	298	36,882	16,398,159	445	34,494	13,772,119	399
Lincoln	270	88,830	329	288	140,083	486	229	77,450	338
Wentworth	3,125	978,125	313	3,215	1,767,286	550	2,380	1,079,225	453
Halton	1,876	487,760	260	2,046	1,135,530	555	1,691	720,476	426
Peel	1,553	509,384	328	1,626	665,684	409	1,317	467,478	355
York	4,193	1,320,795	315	4,231	1,833,292	433	3,190	1,209,049	379
Ontario	12,657	5,062,800	400	12,721	5,973,782	470	11,567	4,490,474	388
Durham	5,538	2,159,820	390	5,392	2,415,616	448	5,113	2,146,603	420
Northumberland	3,651	1,577,232	432	3,601	1,446,522	402	3,101	1,170,425	377
Prince Edward	174	17,400	100	175	59,500	340	118	24,270	206
Totals	33,037	12,202,146	369	33,295	15,437,295	464	28,706	11,385,450	397
Lennox and Addington	97	21,825	225	97	21,127	218	157	37,075	236
Frontenac	528	120,384	228	557	132,733	238	393	106,585	271
Leeds and Grenville	321	109,461	341	337	110,368	328	241	85,839	356
Dundas	82	20,500	250	82	28,700	350	64	18,464	289
Stormont	64	16,000	250	67	13,400	200	84	19,994	238
Glengarry	23	5,175	225	24	9,600	400	35	11,811	337
Prescott	118	34,574	293	120	47,472	396	113	41,760	370
Russell	356	170,880	480	328	131,200	400	276	106,517	386
Carleton	1,675	624,775	373	1,614	494,045	307	1,414	481,927	341
Renfrew	639	247,932	388	608	145,920	240	585	185,227	317
Lanark	576	230,400	400	566	207,552	367	470	163,662	348
Totals	4,479	1,601,906	358	4,400	1,342.117	305	3,832	1,258,861	329
Victoria	3,975	1,462,800	368	3,905	1,776,775	455	3,266	1,217,878	373
Peterborough	1,569	660,549	421	1,564	426,816	273	1,152	386,086	335
Haliburton	343	109,760	320	329	93,535	284	318	86,470	272
Hastings	1,452	429,792	296	1,293	346,136	268	839	227,373	271
Totals	7,339	2,662,901	363	7,091	2,643,262	373	5,575	1,917,807	344
Muskoka	1,169	482,797	413	1,065	251,447	236	989	298,950	302
Parry Sound	574	211,806	369	505	196,950	390	591	184,789	313
Algoma	558	125,550	225	485	145,500	300	485	159,784	329
Totals	2,301	820,153	356	2,055	593,897	289	2,065	643,523	312
The Province	111,103	37,021,260	333	113,188	47,640,237	421	101,537	39,239.849	386

RATIOS OF AVERAGE PRODUCTION.

TABLE No. XXII.—Showing by County Municipalities and groups of Counties the per cent. ratios of total yields in 1889 to average of total yields for the eight years 1882-9.

Counties.	Fall wheat.	Spring wheat.	Barley.	Oats.	Rye.	Peas.	Corn.	Buckwheat.	Beans.	Hay and clover.	Potatoes.	Mangel-wurzels.	Carrots.	Turnips.
Essex	73	38	138	99	96	83	50	66	66	135	45	40	61	39
Kent	71	86	142	104	128	119	61	64	85	132	48	88	80	76
Elgin	75	28	94	94	146	100	61	104	83	144	53	96	121	96
Norfolk	79	51	88	81	74	129	73	79	54	126	41	125	125	122
Haldimand	89	59	87	103	34	100	96	121	96	111	45	144	139	201
Welland	79	13	73	105	93	118	67	86	62	136	54	127	118	91
Group	76	52	101	98	88	111	60	84	82	131	47	100	108	106
Lambton	92	25	101	102	151	100	60	69	60	127	44	85	111	80
Huron	55	13	114	112	75	102	86	56	86	127	77	107	79	85
Bruce	52	53	96	100	124	89	165	83	99	131	81	72	71	83
Group	63	30	105	106	115	96	71	70	73	129	71	97	82	84
Grey	62	50	78	123	87	117	158	62	91	133	76	75	71	84
Simcoe	88	85	134	132	105	112	135	79	128	128	87	80	98	122
Group	80	66	111	127	101	115	143	70	112	131	82	78	85	95
Middlesex	62	11	100	110	114	98	71	89	80	123	44	90	86	74
Oxford	76	17	101	111	143	81	70	73	74	115	57	98	106	75
Brant	63	5	139	101	122	131	98	70	9	118	66	63	69	76
Perth	60	18	103	118	29	82	72	57	97	111	44	83	53	56
Wellington	48	43	129	136	100	93	124	104	135	107	87	91	68	82
Waterloo	75	8	135	113	54	95	79	31	74	96	62	41	98	64
Dufferin	33	77	114	119	26	117	156	61	108	125	73	70	91	108
Group	63	37	120	117	95	95	77	75	58	114	63	84	81	76
Lincoln	86	38	106	88	36	106	73	63	95	122	53	120	99	115
Wentworth	65	32	118	89	101	104	84	60	81	117	56	58	64	91
Halton	105	83	128	121	100	94	144	124	103	110	67	86	123	68
Peel	76	69	134	130	53	101	257	145	84	109	76	104	87	109
York	78	72	126	115	97	105	116	69	72	113	99	88	77	109
Ontario	44	83	128	128	60	94	103	146	29	117	96	99	90	113
Durham	118	64	117	109	86	81	141	154	65	115	94	114	128	101
Northumberland	105	53	110	115	90	116	124	125	77	123	88	102	153	135
Prince Edward	118	44	125	106	121	157	119	79	90	135	66	59	156	72
Group	81	69	123	114	93	103	105	101	74	117	83	92	99	107
Lennox and Addington	137	40	105	116	81	111	154	106	76	141	84	97	129	59
Frontenac	46	70	96	117	88	71	119	98	61	141	64	143	138	113
Leeds and Grenville	72	58	89	106	29	85	147	104	71	133	58	137	122	128
Dundas	36	57	67	91	56	52	99	98	177	122	49	38	81	111
Stormont	20	70	77	84	43	36	103	72	134	136	35	40	205	80
Glengarry	19	79	114	89	....	45	158	111	64	143	36	113	129	44
Prescott	....	63	144	94	65	38	112	84	74	123	72	146	92	83
Russell	104	69	147	95	6	39	107	87	41	101	85	138	141	160
Carleton	30	92	117	102	73	99	156	131	90	99	113	86	101	130
Renfrew	30	112	179	150	99	135	96	63	114	119	124	118	88	134
Lanark	114	71	144	110	49	108	139	75	114	115	92	86	83	141
Group	74	80	103	106	68	92	133	96	93	126	80	104	111	127
Victoria	45	76	126	131	121	110	170	191	80	116	134	130	135	120
Peterboro'	78	61	110	130	57	114	113	86	37	119	136	114	113	171
Haliburton	171	119	104	156	63	103	88	106	112	101	95	49	81	127
Hastings	154	50	104	128	76	134	125	88	90	116	102	179	139	189
Group	92	73	114	131	75	119	128	95	80	116	117	136	126	139
Muskoka	154	58	81	135	60	112	127	88	134	102	137	88	166	161
Parry Sound	72	32	68	115	45	98	83	19	63	133	124	73	86	115
Algoma	102	79	94	144	264	139	155	124	261	138	120	82	130	79
Group	106	70	81	132	95	124	130	79	145	118	129	85	142	127
The Province	72	65	116	113	81	103	78	94	82	122	78	93	96	94

RATIOS OF AVERAGE YIELD PER ACRE.

TABLE No. XXIII.—Showing by County Municipalities and groups of Counties the per cent. ratios of average yields per acre in 1889 to average yields per acre for the eight years 1882-9.

Counties.	Fall wheat.	Spring wheat.	Barley.	Oats.	Rye.	Pease.	Corn.	Buckwheat.	Beans.	Hay and clover.	Potatoes.	Mangel-wurzels.	Carrots.	Turnips.
Essex	79	86	88	86	91	87	55	60	71	119	50	41	44	41
Kent	75	108	102	94	102	84	66	72	78	119	62	76	70	90
Elgin	85	99	96	85	107	81	71	115	96	132	67	83	102	86
Norfolk	83	96	84	76	65	102	80	96	130	124	51	85	88	74
Haldimand	88	87	96	84	60	88	73	105	70	109	52	82	95	93
Welland	93	74	92	90	96	106	73	91	84	117	66	89	94	81
Group	82	97	96	86	79	91	65	94	79	120	58	77	84	78
Lambton	88	92	96	86	108	78	62	78	78	114	54	64	83	63
Huron	70	98	95	90	86	88	72	97	75	115	84	90	81	86
Bruce	68	88	86	79	112	81	89	111	128	113	88	76	72	79
Group	74	91	92	85	104	84	67	92	86	114	80	84	78	81
Grey	67	89	90	94	112	104	80	80	119	121	83	84	84	82
Simcoe	86	95	104	107	96	101	103	116	103	113	88	110	103	105
Group	80	94	100	99	98	103	92	96	110	117	86	100	94	89
Middlesex	76	101	92	90	98	74	70	101	92	115	56	74	86	67
Oxford	87	101	93	93	112	65	69	94	72	114	67	73	84	68
Brant	88	117	103	94	79	118	88	93	90	126	68	61	67	58
Perth	69	119	103	96	135	66	55	100	100	107	53	66	58	69
Wellington	76	107	108	107	91	87	85	110	105	102	94	73	73	82
Waterloo	83	110	105	97	62	83	92	60	87	99	69	37	79	67
Dufferin	73	82	95	96	59	101	95	85	92	113	83	96	92	103
Group	79	90	101	97	88	81	74	95	91	110	72	69	77	75
Lincoln	99	89	90	89	107	93	70	77	90	117	63	94	78	97
Wentworth	84	86	89	79	84	84	84	70	104	118	65	55	55	69
Halton	113	109	106	103	117	93	101	101	103	113	78	81	100	61
Peel	89	95	104	103	76	85	130	100	99	107	74	76	84	92
York	97	90	105	99	127	91	90	93	73	114	101	80	86	88
Ontario	80	93	102	105	95	88	81	123	76	116	89	99	100	103
Durham	76	92	103	97	109	87	121	99	71	121	99	109	111	93
Northumberland	65	84	100	100	94	122	100	100	79	120	86	95	107	115
Prince Edward	132	77	113	105	111	108	113	77	106	137	69	57	76	49
Group	91	91	105	99	101	93	92	89	86	117	86	84	90	93
Lennox and Addington	107	88	111	104	102	109	132	134	147	121	98	102	114	95
Frontenac	86	71	87	97	102	86	99	117	79	133	64	84	91	84
Leeds and Grenville	97	71	92	90	102	85	113	106	79	126	57	97	102	96
Dundas	114	70	79	79	88	58	72	95	112	110	51	49	51	87
Stormont	98	68	91	82	84	45	110	98	89	118	39	80	112	105
Glengarry	110	82	97	84	....	67	140	93	82	115	39	121	89	67
Prescott	....	64	94	86	98	78	116	124	74	107	75	90	93	79
Russell	91	81	112	91	101	78	102	128	84	105	91	147	100	124
Carleton	122	103	98	86	118	107	110	145	101	97	105	98	95	109
Renfrew	133	116	126	121	120	134	95	93	120	109	123	143	103	122
Lanark	99	71	103	91	92	105	112	109	117	108	98	107	109	115
Group	103	88	99	92	107	105	110	114	97	116	82	97	95	109
Victoria	69	95	106	105	113	112	103	167	103	114	111	92	110	99
Peterborough	60	91	104	105	78	116	96	125	98	121	123	108	111	126
Haliburton	88	120	105	115	111	105	139	139	128	93	99	74	67	118
Hastings	104	79	106	112	103	121	100	89	68	108	101	112	103	109
Group	79	91	106	108	100	116	101	103	79	112	109	99	108	106
Muskoka	101	91	96	102	80	103	130	93	98	94	120	119	149	137
Parry Sound	82	80	93	87	110	86	86	127	75	115	104	104	86	118
Algoma	77	97	94	95	109	98	89	87	102	114	108	70	102	68
Group	80	97	95	97	95	99	111	93	95	104	112	99	126	114
The Province	81	92	102	95	98	94	76	102	83	115	83	81	88	86

ACREAGE UNDER CROP; ALSO PASTURE AND ORCHARD.

TABLE No. XXIV.—Showing by County Municipalities and groups of Counties in Ontario the total area under crops enumerated in Tables VIII—XXI, for the years 1888 and 1889, with the yearly average for the eight years 1882-9; also the area in Pasture and Orchard and Garden for the same period.

Counties.	Acres in crop.			Pasture.		Orchard and Garden.		
	1889.	1888.	1882-9.	1889.	1888.	1889.	1888.	1882-9
Essex	145,522	152,211	140,388	28,500	27,563	6,210	5,914	5,991
Kent	217,670	220,170	206,984	47,721	45,405	7,356	7,004	7,422
Elgin	167,292	172,972	165,881	68,386	66,137	7,228	6,856	7,023
Norfolk	156,817	157,981	153,670	43,153	41,573	8,078	7,256	7,783
Haldimand	147,924	143,110	141,350	35,715	33,725	4,391	4,222	4,559
Welland	114,634	112,042	110,547	26,148	24,927	6,436	6,763	6,771
Totals	949,859	958,486	918,820	249,623	239,330	39,699	38,015	39,549
Lambton	182,334	181,074	169,400	65,999	63,157	6,718	6,506	6,198
Huron	340,239	332,310	329,869	146,741	141,642	8,613	8,092	8,430
Bruce	290,184	287,834	272,564	106,688	103,080	5,774	5,744	5,688
Totals	812,757	801,218	771,833	319,428	307,879	21,105	20,342	20,316
Grey	378,771	365,428	357,325	137,924	134,037	7,124	7,297	7,224
Simcoe	340,702	324,815	304,976	83,163	79,888	4,605	4,323	4,686
Totals	719,473	690,243	662,301	221,087	213,925	11,729	11,620	11,910
Middlesex	308,768	315,042	303,143	162,980	159,160	9,773	9,800	10,466
Oxford	219,772	221,770	215,951	84,826	85,081	7,863	7,782	8,452
Brant	118,876	120,242	120,380	29,940	27,981	3,993	4,004	4,587
Perth	235,045	231,622	231,895	81,231	80,827	4,658	4,250	4,846
Wellington	304,193	303,399	292,779	85,582	84,903	4,682	4,350	4,870
Waterloo	165,350	167,647	163,448	31,908	32,466	4,869	5,030	5,213
Dufferin	129,304	129,541	122,698	35,151	34,428	1,418	1,308	1,503
Totals	1,481,308	1,489,263	1,450,294	511,618	504,840	37,256	36,524	39,937
Lincoln	99,807	100,890	101,516	28,281	27,325	7,714	7,333	7,848
Wentworth	145,329	143,818	143,217	39,022	38,521	8,847	9,291	9,073
Halton	110,170	104,948	106,946	38,506	38,012	4,947	4,677	4,831
Peel	175,772	168,759	161,322	38,687	37,307	4,360	4,491	4,222
York	312,065	307,019	298,646	59,127	60,211	6,591	7,379	7,774
Ontario	260,533	256,140	245,531	57,360	57,188	4,733	4,953	5,293
Durham	202,018	201,293	203,423	48,510	50,062	3,251	3,503	3,892
Northumberland	225,941	219,481	216,784	64,300	60,775	6,162	6,511	6,461
Prince Edward	136,326	132,967	130,431	36,623	37,219	5,637	5,743	6,187
Totals	1,667,961	1,635,315	1,607,816	410,416	406,620	52,242	53,881	55,581
Lennox & Addington	143,514	135,382	139,556	51,282	48,017	2,600	2,704	2,797
Frontenac	149,402	143,075	140,754	54,167	52,589	1,993	1,884	2,235
Leeds and Grenville	246,299	237,859	235,338	154,167	151,590	2,961	2,624	3,221
Dundas	91,328	89,077	85,574	39,031	38,042	1,109	962	1,180
Stormont	75,243	73,149	72,361	39,587	38,028	764	926	1,009
Glengarry	94,656	91,431	87,006	41,217	39,978	565	316	582
Prescott	86,019	85,393	83,112	34,576	34,438	462	227	287
Russell	46,372	45,240	48,718	25,658	24,766	116	191	158
Carleton	189,290	189,821	181,466	70,730	69,207	269	555	562
Renfrew	175,633	168,348	162,390	70,435	67,273	229	365	583
Lanark	153,164	143,727	143,764	104,551	101,211	1,011	979	1,116
Totals	1,450,920	1,402,502	1,380,039	685,401	665,139	12,079	11,733	13,730
Victoria	181,107	174,676	172,359	39,674	38,258	1,541	1,266	1,797
Peterborough	147,414	139,084	140,457	56,298	51,935	1,803	1,889	1,960
Haliburton	22,192	21,516	19,800	5,233	4,974	92	95	99
Hastings	231,630	215,826	222,442	89,989	84,656	4,694	4,589	5,440
Totals	582,343	551,102	555,058	191,194	179,823	8,130	7,839	9,296
Muskoka	41,439	40,441	37,182	9,582	9,108	356	403	349
Parry Sound	20,869	18,772	18,951	4,631	4,336	17	4	29
Algoma	31,654	29,008	26,399	4,982	4,604	153	196	150
Totals	93,962	88,221	82,532	19,195	18,048	526	603	528
The Province	7,758,583	7,616,350	7,428,693	2,607,962	2,535,604	182,766	180,557	190,847

RATIOS OF AREAS UNDER CROPS—1889.

TABLE No. XXV.—Showing by County Municipalities and groups of Counties the number of acres under the various crops in Ontario in 1889, per 1,000 acres of cleared land.

Counties.	Fall wheat.	Spring wheat.	Barley.	Oats.	Rye.	Peas.	Corn.	Buckwheat.	Beans.	Hay and clover.	Potatoes.	Mangel-wurzels.	Carrots.	Turnips.	Totals.
Essex	144.4	3.3	21.1	167.0	4.2	18.1	137.4	3.2	2.0	201.6	12.2	0.9	0.6	0.9	716.9
Kent	195.4	7.3	30.5	122.5	2.7	50.4	80.5	2.5	43.6	192.3	8.8	1.1	0.5	1.0	739.1
Elgin	141.0	1.8	15.8	130 6	6.7	55.0	45.7	4.0	3.3	195.9	8.1	1.2	0.6	1.4	611.1
Norfolk	136.3	1.9	27.7	123.3	36.9	81.3	55.7	16.4	1.0	176.3	11 9	1.3	0.8	6.8	677.6
Haldimand	165.6	9.4	64 5	138.3	2.4	74.3	12.8	4.3	1.0	250.7	6.5	1.5	0.7	1.3	733.3
Welland	117.5	1.6	18.7	140.5	3.9	27.6	35.1	10.0	3.0	332.8	12 0	1.4	0.6	1.2	705.9
Group	153.3	4.3	29.3	135.3	9.6	52.6	62.4	6.4	11.0	217.0	9.7	1.2	0.6	2.1	694.8
Lambton	123.7	5.8	51.9	157.1	1.0	40.7	23.5	1.2	0.9	199.5	8.2	1.7	0.8	1.3	617.3
Huron	96.7	4.0	59.3	173 1	0.4	65.5	3.4	0.3	0.2	186.5	8.4	3.1	0.9	12.1	613.9
Bruce	82.0	17.7	48.0	166.9	1.0	89.2	2.3	0 5	0.2	209.8	9.7	0.9	0.6	13.0	641.8
Group	97.7	9.2	53.7	167.3	0.8	68.1	7.6	0.6	0.4	197.5	8.8	2.0	0.8	9.9	624.4
Grey	46.1	41.9	36.5	207.4	0.7	93.4	1.7	0.5	0.1	228.9	11.4	0.6	0.8	16.6	686.6
Simcoe	117.9	65.0	84.7	164.9	5.3	72 6	2.2	0.5	0.3	178.8	14.0	1.0	1.2	8.1	716.5
Group	79.4	52.6	58.8	187.7	2.8	83.8	2.0	0.5	0.2	205.7	12.6	0.7	1.0	12.7	700.5
Middlesex	112 5	2.3	31.1	166.4	1.0	54.5	20.5	0.9	0.5	179.2	8.3	3.1	0.9	3.5	584.7
Oxford	99.8	4.5	54 0	182.9	4.5	54.8	24.9	1.3	0.7	181.1	8.2	4.7	1.3	17.0	639.7
Brant	124.2	0.3	146.6	111.2	9 2	56 4	30.8	2.9	0.2	171.5	12.5	2.1	1.3	19.7	688.9
Perth	108 5	5.1	48.7	187.4	0.1	77.4	2.6	0.2	0.2	190.4	8.7	5.3	1.1	10.4	646.1
Wellington	37.8	18.4	98.2	201.3	2.1	89.9	1 9	0.3	0.1	195.7	12.3	2.5	0.6	29.2	690.3
Waterloo	153.8	1.5	90.5	172.2	1.9	69.1	4.6	0.2	0.1	174.0	11.2	2.2	1.7	20.7	703.7
Dufferin	25.3	101.5	76.1	188.4	1.8	70.9	0.6	0.4	0.1	194.3	14 1	0 5	0.8	13.1	687.9
Group	93.4	14.2	69.1	177.2	2.4	68.1	12.2	0.8	0.3	184.6	10.2	3.2	1.0	15.4	652.1
Lincoln	127.2	6.0	34.6	118.4	0.9	35.6	44.5	3.6	1.1	288.7	10.9	2.1	1.1	1.8	676.5
Wentworth	114.1	4.4	83.0	156.1	5.7	63.5	21.1	2.8	0.4	216.0	14.5	2.2	1.3	15.1	700.2
Halton	123.4	15.4	97.1	132.6	2.5	62.3	10.0	1.3	0.3	197.9	8.4	2.7	0.9	11.3	666.1
Peel	95.7	37.0	192 7	152.4	4.0	66.9	4.4	1.6	0.2	159.7	12.5	2.6	1.4	6.5	737.6
York	73.2	50.3	169.5	176.9	3.3	79.1	4.4	0.5	0.3	173.3	18.1	4.7	1.7	10.3	765.6
Ontario	15.8	123 9	147.7	176.7	5.3	83.9	9.7	1.4	0.3	157.2	13.3	2.3	1.4	37.7	776.6
Durham	20.5	93.3	200.1	137.9	14.3	73.1	7.9	6.9	1.0	148.7	10.9	1.7	2.1	20.2	738.6
Northumberland	57.2	57.9	163.2	108.6	34.4	60.7	15.5	21.3	1.5	170.8	14.1	1.5	1.3	11.6	719.6
Prince Edward	10.3	20.5	241.2	74.9	55 3	102.6	33.7	36.8	2.2	158.4	12.9	0.7	0.7	1.0	751.2
Group	64.4	54.0	155.3	143.1	13.4	71.7	14.0	7.8	0.8	178.2	13.4	2.5	1.4	14.5	734.5
Lennox & Add'n.	12.8	13.0	186.4	119.7	19.9	42.7	12.9	9.9	0.4	262.9	13.6	0.6	0.3	0.5	695.6
Frontenac	4.4	39.8	95.6	154.4	15.1	42.2	9.5	5.8	1.1	304.9	18.8	1.5	1.2	2.5	696.8
Leeds & Gren.	9.1	25.7	25.9	183.2	4.3	15.3	16.8	12.4	0.7	277.4	17.6	0.7	0.4	0.8	590.3
Dundas	2.6	28.4	42.8	253.0	6.7	11.4	16.9	11.2	3.0	285.4	17.5	0.6	0.6	0.6	680.7
Stormont	1.2	40.2	16.7	213 6	2.1	18.2	9.9	12.4	2.3	316.0	15 9	0.1	0.7	0.6	649.9
Glengarry	0.7	51.9	17.7	216.3	....	26.8	5.5	8.2	0.4	302 8	15.6	0.4	0.4	0.2	646.9
Prescott	.....	57.6	30.9	207.3	1.3	31.4	9.3	7.5	3.6	259.4	16.8	0.9	0.4	0.9	627.3
Russell	3.5	45.9	24.5	250.2	0.2	24.7	5.7	8.2	1.3	223.4	18.5	0.7	2.3	4.7	613.8
Carleton	1.3	67.2	32.9	247.8	13.3	42.1	6.7	12.0	1.4	205.1	22.7	1.6	2.0	5.9	662.0
Renfrew	.8	89.3	7.8	191.5	20.2	78.8	1.7	2.8	1.6	256.8	14.5	0.3	0.4	2.4	668.9
Lanark	12.8	50.0	13 8	153.7	8.7	40.5	5.7	13.0	0.7	216.6	11.6	0.4	0.3	2.0	529.8
Group	5.5	46.6	44.4	191.5	9.7	36.1	9.5	9.7	1.3	260.7	16.6	0.8	0.7	2.0	635.1
Victoria	23.5	106.3	156.0	201.7	5.2	65.4	3.9	2.0	0.3	158.7	15.8	3.1	1.6	16.7	760.2
Peterborough	60.9	101.5	66.9	164.7	10.4	66.6	1.9	2.1	0.2	166.6	13.1	1.4	1.5	7.1	664.9
Haliburton	7.6	43.5	9.2	229.7	4.7	50.8	2.3	5.8	0.7	358.5	22.0	0.1	0.8	11.6	747.3
Hastings	38.9	29.1	119.4	142.4	31.1	60.4	20.9	10.3	1.2	214.3	17.6	1.4	0.6	4.3	691.9
Group	39.2	71.4	111.9	168.7	17.1	63.2	10.2	5.5	0.6	190.6	16.1	1.8	1.1	8.9	706.3
Muskoka	2.0	16.8	8.6	216.7	5.5	55.2	3.8	5.1	1.1	417.9	29.3	0.7	1.6	22.2	786.5
Parry Sound	0.9	16.9	14.1	179 0	4.2	44.7	0.9	0.4	0.3	313.9	25.6	0.2	0.7	17.0	618.8
Algoma	13.2	122.1	13.8	156.4	12.3	126.3	3.4	2.0	0.9	288.0	19.0	0.7	0.9	13.6	772.6
Group	5.3	50.7	11.7	187.3	7.4	75.3	2.9	2.9	0.8	348.6	25.0	0.6	1.1	18.0	737.6
The Province	71 6	34.7	76.3	167.6	7.9	61.7	16.3	4.9	1.9	208.0	12.7	1.8	1.0	9.7	676.1

RATIOS OF AREAS UNDER CROP—1882-9.

TABLE No. XXVI.—Showing by County Municipalities and groups of Counties the average number of acres under the various crops per 1,000 acres of cleared land in Ontario for the eight years 1882-9.

Counties.	Fall wheat.	Spring wheat.	Barley.	Oats.	Rye.	Peas.	Corn.	Buckwheat.	Beans.	Hay and clover.	Potatoes.	Mangel-wurzels.	Carrots.	Turnips.	Totals.
Essex	174.8	8.3	15.2	161.0	4.4	21.1	166.1	3.4	2.4	197.6	15.3	1.1	.5	1.1	772.3
Kent	222.5	9.9	23.8	119.8	2.4	38.5	94.6	3.1	42.6	187.7	12.3	1.0	.5	1.2	759.9
Elgin	170.2	6.7	17.0	125.5	5.2	47.5	56.7	4.8	4.0	190.5	11.0	1.1	.6	1.4	642.2
Norfolk	148.5	3.7	27.8	120.2	33.7	66.6	64.5	21.2	3.3	180.7	15.5	1.0	.6	4.3	691.6
Haldimand	170.1	14.2	73.9	116.6	4.3	67.7	10.9	4.0	.8	253.2	7.7	.9	.5	.6	725.4
Welland	143.7	9.6	24.4	124.9	4.2	25.8	41.6	11.1	4.7	298.7	15 2	1.0	.5	1.1	706.5
Group	174.9	8.6	29.6	127.0	9.1	45.6	72.8	7.7	11.4	211.9	12.7	1.0	.5	1.7	714.5
Lambton	137.8	24.4	57.4	154.2	.9	36.8	29.1	1.6	1.4	208.1	11.6	1.5	.7	1.2	666.7
Huron	131.3	33.8	53.1	149.0	.5	61.2	3.4	.5	.2	181.4	9.9	2.9	1.0	12.9	641.1
Bruce	117.7	32.6	47.1	144.7	1.0	89.6	1.3	.8	.3	199.8	11.6	1.0	.7	13.5	661.7
Group	128.0	31.4	52.0	148.6	.7	65.9	8.2	.8	.5	193.6	10.8	1.9	.8	10.6	653.8
Grey	52.1	78.0	44.1	164.8	1.0	86.2	.9	.6	.2	215.6	13.0	.7	1.0	16.8	675.0
Simcoe	123.2	78.8	71.2	143 4	5.2	71.1	1.8	.7	.3	170.3	15.3	1.4	1.3	7.5	691.5
Group	84.4	78.3	56.4	155.1	2.9	79.4	1.4	.6	.2	195.0	14.0	1.0	1.2	12.6	682.5
Middlesex	145.4	22.3	30.1	143.8	.9	43.6	22.0	1.1	.7	176.6	11.0	2.6	.9	3.4	604.4
Oxford	116.9	28.3	51.2	157.8	3.6	45.7	26.6	1.9	.8	184.8	9.9	3.6	1.1	15.8	648.0
Brant	176.8	6.9	111.0	106.8	6.1	52.3	29.4	4.0	3.1	187.7	13.3	2.1	1.3	15.6	716.4
Perth	130.8	35.7	50.7	159.9	.6	65.5	2.2	.3	.2	190 9	10.8	4.4	1.2	13.3	666.5
Wellington	63.1	47.4	85.6	166.3	2.0	88.2	1.4	.3	.1	194.5	14.0	2.1	.7	30.7	696.4
Waterloo	173.1	22.0	72.0	151.6	2.3	61.4	6.0	.4	.2	183.3	12.6	2.0	1.5	22.1	710.5
Dufferin	60.7	116.1	68.6	164.5	4.3	66.1	.5	.6	.1	189.5	17.4	7	.9	13.4	703.4
Group	121.4	36.5	61.1	152.5	2.3	60.4	12.8	1.0	.6	186.2	12.2	2.7	1.0	15.9	666.6
Lincoln	147.9	14.2	29.7	119.7	2.8	31.6	44 1	4.9	1.1	280.4	13.1	1.7	.8	1.6	693.6
Wentworth	150.0	11.8	63.5	139.4	4.8	51.3	22.4	3.5	.6	218.2	17.0	2.1	1.1	11.6	697.3
Halton	133.1	20.2	80.5	112.3	2.9	61.8	7.2	1.1	.3	202.8	9.7	2.5	.8	10.2	645.4
Peel	115.6	52.8	155.1	125.8	5.9	58.7	2.3	1.2	.3	163.5	12.5	2.0	1.4	5.7	702.8
York	92.0	63.4	143.9	153.9	4.3	68.9	3.6	.7	.4	176.8	18.7	4.3	1.8	7.9	740.6
Ontario	29.2	141.4	120.5	148.1	8 5	80.6	8.0	1.2	.9	158.0	12.5	2.3	1.6	35.3	748.1
Durham	13.2	134.8	175.8	123.1	18.3	78.8	7.2	4.2	1.3	157.9	11.6	1.6	1.9	18.8	748.5
Northumberland	36.5	90.1	153.2	97.9	37.2	66.2	13.4	17.0	1.7	172.7	14.1	1.5	.9	10.2	712.6
Prince Edward	11.8	36.7	233.2	76.0	52.2	72.3	36 1	35.9	2.5	164.6	13.7	.7	.4	.7	736.8
Group	73.7	72.8	134.2	125.9	14.9	66.1	13.1	6.8	1.0	181.4	14.1	2.3	1.3	12.9	720.5
Lennox & Add'n.	10.4	29.6	203.1	110.6	25.7	43.6	11.9	13.0	.7	233.2	16.3	.7	.3	.8	699.9
Frontenac	10.2	29.1	199.6	108.7	25.3	42.9	11 7	12.7	.7	229.1	16.0	.7	.3	.8	687.8
Leeds & Gren.	12.9	33.0	27.6	162.7	15.6	16.0	13.5	13.6	.9	274.0	18.2	.5	.4	.6	589.5
Dundas	8.6	35.7	52.2	227.5	11.0	13.3	12.7	11.2	1.9	265 0	18.8	.8	.4	.5	659.6
Stormont	6.0	40 5	20.5	217.8	4.2	23.5	11.1	18.4	1.4	283.9	18.3	.2	.4	.8	647.0
Glengarry	4.4	57.6	16.2	220.0	.4	43.0	5.4	7.9	.7	260.7	17.9	.5	.3	.3	635.3
Prescott	.6	66.4	22.7	211.6	2.3	72.6	10.9	12.9	4.2	254.1	19 6	.6	.4	.9	679.8
Russell	3.2	56.5	20.0	248.0	2.8	51.0	5.9	12.6	2 9	241.2	20 7	.7	1.7	3.8	671.0
Carleton	5.7	81.0	29.9	226.6	23.2	49.7	5.0	14.2	1.6	218.6	22.9	2.0	2.0	5.4	687.8
Renfrew	4 0	101.5	6.0	169.8	27.2	86.2	2.0	4.6	1.9	258.6	15.8	.4	.4	2.5	680.9
Lanark	11.5	51.6	10.2	132.0	16.9	41.0	4.9	20.5	.7	213.2	12 9	.5	.5	1.7	518.1
Group	8.1	54.2	45.4	176.0	16.1	43.6	8.3	12.6	1.4	253.5	18.0	.8	.7	1.8	640.5
Victoria	37.2	137.1	135.5	166.6	5.0	68.8	2.4	1.7	.4	160.9	13.5	2.2	1.3	14.2	746.8
Peterborough	49.6	120.2	66.5	141.4	14.9	71.3	1.7	3 2	.5	178.8	12 5	1.4	1.5	5.5	669.0
Haliburton	4.4	49.4	10.6	192.8	9.5	58.5	4.3	8.8	.9	378.0	26.0	.2	.7	12.2	756.3
Hastings	27.1	47.7	125.4	129.3	43.7	56.5	18.1	11.7	.9	206.2	18.1	.9	.5	2.6	688.7
Group	35.3	93.1	108.9	145.6	23.6	64.1	8.7	6.4	.7	191.3	15.5	1.4	1.0	7.1	702.7
Muskoka	1.5	29.6	11.3	184.7	8.2	57.0	4.6	6.2	.9	433.6	28 7	1.1	1.6	21.0	790.0
Parry Sound	1.3	54.8	25.2	178.2	13.3	51.2	1.6	4.2	.5	352.1	27.9	.3	1.0	22.9	734.5
Algoma	12.8	192.9	17.7	133.2	6.5	114.9	2.5	2 1	.4	305.7	21.8	.7	.9	15.2	827.3
Group	4.9	85.5	16.6	167.4	9.0	73.2	3.2	4.5	.7	374.6	26.4	.8	1.2	19.7	787.7
The Province	85.6	51.9	70.9	148.1	9.9	59.2	17.1	5.7	2.1	205.3	14.2	1 7	.9	9.3	681.9

PART II.

LIVE STOCK, THE DAIRY AND THE APIARY.

LIVE STOCK.

The May bulletin stated that the condition of the farm animals throughout the province was very much better than the most sanguine could have hoped for six months previously. The drouth had been so destructive in the preceding summer that farmers in the east and north had been compelled to reduce the number of their stock in many cases to only sufficient to carry on the work of the farms. Into the worst affected counties large quantities of hay were imported. The known scarcity of feed set farmers to work to economise their resources. As one of the correspondents says, "less food was wasted than usual." Then the weather became most favorable to the keeping of live stock. Gentle but plentiful rains fell during the early and late fall months. The pastures yielded abundantly up to an unusually late period. A mild winter followed, rendering it unnecessary to feed heavily in order to maintain the animal heat. The open spring enabled farmers to turn out their cattle early. Generally speaking, the winter was the easiest for stock on record. The result was that food, instead of being scarce was abundant. Hay was cheaper in Lennox in the spring than it was in the previous fall, and live stock came through the winter in better condition than for years previously. One correspondent from Huron reported that the farmers, anticipating scarcity, chopped great quantities of oats and oat straw, leaving their hay over till spring. From other parts of this county large quantities of hay were shipped to less fortunate sections. A correspondent in South Gower, Grenville, reported cases of death from actual starvation among cattle, and stated that some of the cows were so weak in the spring that they had to be lifted. In almost every other place reported from there was a surplus of food left over. In Wellington, Waterloo and other root-growing counties the abundant crop of mangels and turnips supplied the place of dry fodder. In Waterloo turnips were so plentiful that they were sold at five cents a bushel. About one-tenth of the reports stated that the cattle were in poor condition, but most of these reports added that the animals were healthy and strong. The condition of the health of the cattle, sheep and pigs seems to be usually good. No infectious or epizootic disease among them was reported. Among horses there was an outbreak of a disease somewhat similar to the old epizootic which caused so much inconvenience on its first appearance about eighteen years ago. It was reported in greater or less severity from the counties of Renfrew, Peterboro', Hastings, Parry Sound, Durham, Northumberland, Prince Edward, Carleton, Frontenac, Prescott, Bruce, Grey, York, Oxford, Brant, Perth, etc. It appears to have existed in a virulent form in the shanties of the Upper Ottawa, where many horses died from the disease. There was one report of glanders in Prince Edward. A return from the township of Perry, in the district of Parry Sound, stated that a disease resembling glanders broke out among a flock of sheep taken there from the neighborhood of Hamilton. The whole flock has died or been killed, and it is hoped that the disease has been effectually stamped out. Other than these, there were no cases of serious disease, and on the whole the condition of our live stock, reduced though the numbers of the animals may be, was such as to give cause for the liveliest satisfaction.

The July bulletin described the condition of stock throughout the province as most gratifying. The pastures had been and still were in excellent condition, in consequence of the abundant supply of rain; although there were a few instances where they suffered through flooding, and by the cattle having been turned out too early upon them. There seemed, however, to be an impression among many that the milk was of inferior quality, which was attributed to various causes, but primarily to the cool, wet weather. To this cause may also be attributed the fact that fat cattle did not make flesh as rapidly as might be desired, and were stated to be somewhat poor and thin, more particularly in the

north-western counties. The fact that so much stock was disposed of during the previous winter was regretted by many, especially in the eastern part of the province, where it was believed the dairy supplies would be considerably affected. Sheep were reported in some localities as poor in condition, owing to damp pastures and cool weather, many having been sheared too early; but horses were in fine condition, and, like all other farm animals, they were exceptionally free from disease. The condition of stock in the spring of the year, although much better than anticipated, was not all that could be desired; it was gratifying therefore to find how quickly they reached a favorable condition in July, and that the freedom from infectious disease reported in the May bulletin still continued.

September reports were not so cheerful. The midsummer drouth which prevailed over the western part of the province for six weeks, and over the whole province for a month, left pastures very brown and bare, and live stock fell off in flesh. The milk supply was also affected, and the dairy industry was suffering as correspondents wrote.

According to the November bulletin reports were uneven regarding fall pastures. In the Lake Erie, Lake Huron and West Midland counties the greater part of the reports were unfavorable, but in the other groups, more particularly in the St. Lawrence and Ottawa counties, good pastures were the rule. As might be expected, the condition of cattle was much better in the eastern half of the province than in the western on account of the better grazing. During the summer a great many beeves were sold off the grass for the British markets, and there were hardly as many as usual left to go into winter quarters. It would seem as if sheep were coming into favor again in the western counties. Only a small portion are now fattened, the lambs as a general thing being sold off the pasture to drovers or butchers. Several correspondents complained of that arch-enemy of the sheep raiser—the neighbor's dog. A very large number of hogs were sold during the fall, chiefly on foot. Pen fattening was nicely started as correspondents wrote. Fodder was plentiful in every part of the province. There was a good supply of hay, and an immense amount of straw; and while in some counties corn and roots were short, the general outlook was bright as regards the wintering of farm stock. The silo was being tested in nearly every section of the country, but only to a limited extent. Many farmers, however, were apparently awaiting the result of the experiments with the silos built during the year by some of the more enterprising of our Ontario farmers.

HORSES.—The following table gives the number of horses by county groups and for the province in each of the eight years, 1882-9:

	Lake Erie.	Lake Huron.	Georgian Bay.	West Midland.	Lake Ontario.	St. Lawrence and Ottawa.	East Midland.	Northern Districts.	The Province.
1889.....	84,975	66,750	52,855	124,325	131,551	111,250	42,135	4,954	618,795
1888.....	81,481	63,098	50,240	119,001	127,929	109,161	40,763	4,545	596,218
1887	77,539	59,936	47,774	114,529	125,713	105,900	39,938	4,032	575,361
1886.....	77,949	59,879	46,828	111,454	126,204	105,228	38,066	4,041	569,649
1885.....	75,408	58,189	46,054	111,271	122,078	102,938	39,048	3,823	558,809
1884.....	74,116	56,414	43,316	106,324	117,985	96,889	37,412	3,497	535,953
1883.....	75,924	58,424	45,877	111,614	120,945	103,868	39,763	3,718	560,133
1882	67,111	50,126	42,479	101,913	109,265	93,028	37,003	2,679	503,604

A steady increase in the number of horses in the province has been observed since 1884. The total increase in 1889 over the preceding year is 22,577, this addition being distributed among the county groups as follows:—Lake Erie 3,494, Lake Huron 3,652, Georgian Bay 2,615, West Midland 5,324, Lake Ontario 3,622, St. Lawrence and Ottawa 2,089, East Midland 1,372, and the Northern Districts 409. Each group also exceeds its own figures for any previous year.

HORNED CATTLE.—The appended table shows the number of cattle—milch cows being specially classed—by county groups and for the province in 1888 and 1889, together with the total number for the eight years 1882-9 :

Cattle.		Lake Erie.	Lake Huron.	Georgian Bay.	West Midland.	Lake Ontario.	St. Lawrence and Ottawa.	East Midland.	Northern Districts.	The Province.
Milch cows.	1889..	87,594	75,577	59,119	158,255	124,002	203,188	62,809	8,627	779,171
	1888..	87,440	75,743	58,007	154,947	125,432	208,194	63,288	8,508	781,559
All other cattle....	1889..	136,807	175,359	113,408	259,652	169,212	170,850	70,119	17,321	1,112,728
	1888..	138,891	174,115	117,013	263,491	175,325	187,462	73,603	17,179	1,147,079
Totals.....	1889..	224,401	250,936	172,527	417,907	293,214	374,038	132,928	25,948	1,891,899
	1888..	226,331	249,858	175,020	418,438	300,757	395,656	136,891	25,687	1,928,638
	1887..	232,334	244,961	170,157	429,356	312,483	395,230	138,977	24,766	1,948,264
	1886..	239,183	250,631	178,296	447,929	326,751	412,176	137,991	25,216	2,018,173
	1885..	230,142	244,300	179,073	438,807	316,302	401,086	139,938	26,832	1,976,480
	1884..	222,016	246,755	176,464	431,885	303,675	384,215	135,047	25,613	1,925,670
	1883..	213,059	232,347	164,261	407,749	284,213	371,582	131,454	23,948	1,828,613
	1882.	187,215	190,908	140,062	364,304	250,841	323,390	115,382	14,210	1,586,312

There is a falling off of 36,739 in the number of cattle in the province, the decrease being divided as follows :—Milch cows 2,388, all other cattle 34,351. In the St Lawrence and Ottawa counties alone the number of milch cows falls 5,006 below the figures of the previous year, thus bearing out the statements in the August and November bulletins (1888) regarding the wholesale disposal of dairy animals in Lennox and the river counties on account of the drouth. A decrease in this class also took place in the Lake Huron, Lake Ontario and East Midland groups. Milch cows are now 41.2 per cent. of the total number of cattle in the province. In the other classes of cattle a decrease occurred in six groups, the Lake Huron counties and the Northern Districts being the exceptions. The heaviest falling off, as was the case with milch cows, is to be found in the St. Lawrence and Ottawa group. The Lake Huron counties and the Northern Districts are the only groups showing a larger total of cattle of all classes than in the previous years.

SHEEP.—The table following gives the number of sheep by county groups and for the province in each of the years 1882-9 :

Year.	Lake Erie.	Lake Huron.	Georgian Bay.	West Midland.	Lake Ontario.	St. Lawrence and Ottawa.	East Midland.	Northern Districts.	The Province
1889.....	146,038	172,656	167,947	257,840	214,475	275,905	89,084	20,235	1,344,180
1888.....	147,428	167,270	163,944	254,755	223,363	283,237	91,045	18,002	1,349,044
1887.....	152,850	169,459	167,592	258,590	216,450	315,130	97,805	18,285	1,396,161
1886.....	171,238	191,776	189,405	300,149	263,571	369,851	105,664	19,295	1,610,949
1885.....	186,718	210,183	207,313	343,009	277,975	387,685	123,618	19,104	1,755,605
1884.....	205,532	238,994	213,484	373,798	297,483	421,472	122,102	17,868	1,890,733
1883.....	202,382	234,489	192,890	384,839	295,004	424,017	119,432	15,731	1,868,784
1882.....	208,071	236,883	188,470	415,062	313,077	422,973	121,465	9,302	1,915,303

The decline in the number of sheep which has been going on for several years is still to be observed. The total number is less by 4,864 than in 1888, and is the lowest recorded in

the series of years forming the table. Although a decrease is seen in the Lake Erie, Lake Ontario, St. Lawrence and Ottawa and East Midland groups, the other four districts show a substantial increase. Generally speaking, sheep are growing less in number in the eastern part of the province, while they are increasing in the west.

THE WOOL CLIP.—The table appended shows the number of fleeces, the weight of wool and the averaga weight per fleece by county groups and for the province for the years 1888 and 1889, together with the average for the province for the eight years 1882-9 :

Districts.	1889.			1888.			Yearly average for eight years, 1882-9.		
	No. of fleeces.	Pounds.	Lb. per fleece.	No. of fleeces.	Pounds.	Lb. per fleece.	No. of Fleeces.	Pounds.	Lb. per fleece.
Lake Erie.....	84,517	485,196	5.74	87,078	503,005	5.78	107,615	598,504	5.56
Lake Huron.....	104,817	615,403	5.87	104,340	599,697	5.75	123,013	699,908	5.69
Georgian Bay	104,259	588,106	5.64	104,468	580,908	5.56	116,180	637,866	5.49
West Midland. ...	154,937	882,542	5.70	157,285	890,654	5.66	196,750	1,114,093	5.66
Lake Ontario.....	129,417	755,834	5.84	139,022	807,905	5.81	163,674	959,528	5.86
St. L. and Ottawa..	178,774	894,353	5.00	188,112	930,557	4.95	232,063	1,122,133	4.84
East Midland.. ...	56,261	291,425	5.18	59,337	310,924	5.24	70,005	361,339	5.16
Northern Districts.	12,948	76,037	5.87	11,880	67,377	5.67	10,978	61,557	5.61
The Province..	825,930	4,588,896	5.56	851,522	4,691,027	5.51	1,020,278	5,554,928	5.44

While the average weight per fleece for the province is 5.56 lb., being .05 lb. more than in the previous year, and .12 more than the average for the eight years 1882-9, the total weight of wool is below that of 1888 by 102,131 lb., on account of the number of fleeces being less in 1889 by 25,592 ; and for the same reason it is greatly below the average of the eight years. The Lake Erie and East Midland groups fail to reach their average weight per fleece for the previous year, and the Lake Ontario district does not touch its average for the eight years, but all the other groups improve on their records for these respective periods. The number of fleeces have increased in the Lake Huron group and in the Northern Districts compared with the figures for the previous year, but the Northern Districts alone show an increase of fleeces compared with the eight years' average.

HOGS.—In the following table the number of hogs in each county group and in the province is given for each of the eight years 1882-9 :

Year.	Lake Erie.	Lake Huron.	Georgian Bay.	West Midland.	Lake Ontario.	St. Lawrence and Ontario.	East Midland.	Northern Districts.	The Province.
1889.....	197,015	73,096	74,104	171,444	148,233	115,645	48,411	7,521	835,469
1888.	186,184	71,343	72,852	165,407	148,291	118,387	49,413	7,202	819,079
1887.....	185,843	69,700	71,015	162,601	154,678	126,061	56,799	6,120	832,817
1886.....	183,356	69,942	76,193	166,002	170,014	137,263	50,327	7,026	860,125
1885.....	163,002	69,709	77,763	155,767	163,933	132,154	51,418	8,516	822,262
1884..... ...	163,451	87,521	91,711	178,755	181,518	140,165	60,843	12,194	916,158
1883.....	173,120	81,824	82,832	177,050	172,738	146,455	62,236	10,472	906,727
1882.....	156,752	74,041	78,054	170,213	169,161	135,226	61,027	5,752	850,226

The decrease in the total number of hogs which was observed in 1888 has not continued, but an increase of 16,390 has placed the number 1,652 above the figures for 1887. This

increase in swine is confined to the four districts first named in the table (comprising the western half of the province) and to the Northern Districts. In the Lake Erie counties, the chief hog raising district of the province, the figures for 1889 exceed those of any year in the table, a thing which cannot be said of any other group.

POULTRY.—The number of poultry of all classes in each of the eight years 1882-9 is given by county groups and for the province in the subjoined table:

Year.	Lake Erie.	Lake Huron.	Georgian Bay.	West Midland.	Lake Ontario.	St. Lawrence and Ottawa.	East Midland.	Northern Districts.	The Province.
1889.....	879,552	727,269	557,286	1,342,071	1,130,730	1,170,461	430,424	66,505	6,304,298
1888	861,584	712,798	548,482	1,303,997	1,112,998	1,139,227	422,163	62,865	6,164,114
1887.....	942,641	703,849	549,889	1,292,085	1,260,654	1,182,717	444,762	61,764	6,438,361
1886.....	1,007,965	740,057	579,679	1,377,089	1,371,697	1,394,001	433,790	64,637	6,968,915
1885.....	942,877	655,455	524,427	1,284,037	1,234,590	1,247,901	390,272	57,246	6,336,805
1884	824,977	671,133	525,544	1,232,858	1,234,179	1,266,214	413,263	69,438	6,237,606
1883.....	809,799	616,699	475,973	1,156,975	1,132,072	1,193,355	412,496	58,975	5,847,344
1882.....	734,174	534,357	439,944	1,073,812	1,098,701	1,046,869	385,211	39,052	5,352,120

Although the total number exceeds the figures for the previous year by 140,184 it falls behind the number in 1887 by 134,063. Compared with the figures for 1888 an increase is observed in each group, yet in every district some year surpasses the number returned for 1889.

PROPORTIONATE NUMBERS OF LIVE STOCK.—The following table gives the average number of the various classes of live stock per 1,000 acres cleared, by county groups and for the province, for the years 1888 and 1889, together with the average of the province for the eight years 1882-9:

Live Stock.	Lake Erie.	Lake Huron.	Georgian Bay.	West Midland.	Lake Ontario.	St. Lawrence and Ottawa.	East Midland.	Northern Districts.	The Province.		
									1889.	1888.	1882-9
Horses and Colts....	62.2	51.3	51.5	54.7	57.9	48.7	51.1	38.9	53.9	52.7	51.8
Cattle: Milch cows.	64.1	58.1	57.6	69.7	54.6	88.9	76.2	67.7	67.9	69.2	67.4
Cattle: Other cattle.	100.1	134.7	110.4	114.3	74.5	74.8	85.0	136.9	97.0	101.4	105.9
Cattle: Total.....	164.2	192.8	168.0	184.0	129.1	163.7	161.2	203.7	164.9	170.6	173.3
Sheep and lambs ..	106.8	132.6	163.5	113.6	94.4	120.8	108.1	158.9	117.1	119.3	150.7
Hogs	141.1	56.2	72.1	75.5	65.3	50.6	58.7	59.0	72.8	72.4	78.5
Poultry	643.5	558.7	542.6	590.8	497.9	512.4	522.1	522.1	549.4	545.1	569.7

For the province, the proportion of horses is 1.2 greater than in the previous year, and 2.1 more than the average for the eight years. The highest rate for this class of stock is seen in the Lake Erie counties, the Lake Ontario group coming next. A decrease is observed in the figures of both classes of cattle per 1,000 acres compared with the previous year, although milch cows slightly exceed their average rate for the eight years. Setting aside the new settlements of the Northern Districts, where cattle graze in the bush to a considerable extent, the St. Lawrence and Ottawa counties lead in the proportion of milch cows, the East Midland group being second, while all other cattle show their high-

est ratio in the Lake Huron group, the Georgian Bay group following. Sheep and lambs have still further declined in the ratio per 1,000 acres cleared; the highest rate for this class of stock is found in the Georgian Bay group. Hogs show a slight gain compared with the rate for 1888, but the figures are still 5.7 less than the average for the eight years. The lake counties show a ratio nearly twice as great as that of the next highest group. Poultry are increasing in their rate per 1,000 acres, being 4.3 above their ratio for the previous year; still they fail by 20.3 to reach their figures for the eight years. The highest ratio in this class is observed in the Lake Erie group, the West Midland counties coming second.

THE DAIRY AND APIARY INDUSTRIES.

There is little to note in this line out of the ordinary run. The usual difference of opinion was expressed by correspondents as to the relative merits of butter and cheese for profit; those near the cities preferring to make butter, while those in well-established cheese districts claimed a decided advantage for factory-made cheese. In the first part of the season the yield of milk was large, butter was plentiful and good and cheese factories were working well. The July bulletin also announced that dairy prospects were more promising than they had been for years. The November reports stated that in most sections of the country the drouth had the effect of closing the cheese factories early, so that the amount of home-made butter was considerably increased in the fall. One correspondent reported an improvement in butter on account of private dairies adopting creamery methods. Another correspondent, a leading dairyman of eastern Ontario, said that complaints were made that the prices of dairy produce had ruled low, but as a whole there was a cheerfulness in the reports regarding the condition of the cheese imdustry. Regarding breeds, Durham grades still lead as the favorite for milch cows, as when they have gone dry they are good for beef. Ayrshires are also popular, especially in the eastern dairy sections, but there is the most noticeable advance in favor of the Holstein, which appears to have found friends east and west. It is only just to state, however, that this breed is comparatively untried except on some of the more fancy farms, and that, like the Jersey, it is still on trial in this province, and has to prove its worthiness to compete with the two families at present leading. A few correspondents prefer the Polled Angus, the Devon or the Galloway, but the common Canadian cow is as strongly championed as any of the fancy strains.

Cheese.—The principal market for Canadian cheese still continues to be found in Great Britain, and it is encouraging to notice that it is steadily growing in favor there in the face of keen competition from European countries. An examination of the British statistics shows that for the five calendar years 1879-83 her total imports of cheese were 996,815,120 lb., and for the succeeding five years 1,036,029,790 lb., being an annual increase in the second period of 7,843,000 lb. The exports of Canada in the first of these periods were 268,228,060 lb. and in the second 404,080,846 lb., or an annual increase in the latter of 27,170,000 lb., almost all of which went to Great Britain. Putting the comparison in another way, it is found that of the total British imports of 1879 (200,458,752 lb.) Canada's share was only 20 per cent., whereas of the total imports of 1888 (214,772,992 lb.) Canada's share was 41 per cent. At this rate of progress the time may not be far distant when the great bulk of Britain's cheese supply is the product of Canadian factories. But to attain that object it is imperative that the closest attention be given to the making of a first-class article, that the requirements of the market be carefully studied, and that every economic improvement be brought into use.

The whole number of factories in operation in Ontario last year, as reported to the Bureau, was 784, being 47 more than in the previous year, 149 more than in 1883 and 46 more than the average for the seven years 1883-9. The following table presents total statistics for all factories in the province for the seven years 1883-9, estimated on the

basis of factories which have made returns for the several years, together with the annual averages for the period of seven years* :

Year.	No. of factories in operation.	Quantity of—		Value of cheese.	No. of patrons.	Average No. of cows.	Value of cheese per lb.	Milk to make 1 lb. of cheese.	Value of product of 100 lb. milk.
		Milk used.	Cheese made.						
		lb.	lb.	$			cts.	lb.	cts.
1889....	784	760,146,327	72,592,847	6,787,619	43,215	273,231	9.350	10.471	89.3
1888....	737	686,369,013	65,299,751	6,031,470	42,065	256,780	9.237	10.511	87.9
1887 ...	737	691,934,579	65,638,656	6,918,913	42,512	254,510	10.541	10.542	100.0
1886....	770	654,703,243	63,721,621	5,893,818	37,665	237,106	9.249	10.274	90.0
1885....	752	733,437,254	71,209,719	5,781,569	44,208	260,244	8.119	10.300	78.8
1884....	751	685,964,727	66,939,573	6,998,889	38,646	254,852	10.456	10.248	102.0
1883....	685	539,696,197	53,513,032	5,589,339	32,638	193,840	10.445	10.085	103.6
1883-9..	738	678,893,049	65,559,314	6,285,945	40,136	247,223	9.588	10.355	92.6

From these tables it appears that the quantity of cheese made in 1889 was 7,293,096 lb. more than in 1888, and 7,033,533 lb. more than the average for the seven years. The value of the cheese was also greater than in 1888 by $756,149, and greater than the annual average by $501,674, although the value per pound was a quarter of a cent less. For the years 1884 and 1887 the value was over one cent a pound more, and although the make of these years was less than in 1889 the total value was greater. The aggregate product for the seven years was very nearly 230,000 tons, and the total value was $44,000,000. The average quantity of milk required to make one pound of cheese for the seven years was 10.355 lb., ranging from 10.085 lb. in 1883 to 10.542 lb. in 1887. The average value of the product per 100 lb. of milk in the seven years was 92.6 cents, the highest being 103.6 cents in 1883 and the lowest 78.8 in 1885.

In the table which follows, averages per factory are presented for the same period of seven years 1883-9 :

Year.	Quantity of—		Value of cheese.	Number of—		Average per cow·		Return per patron.	Average date of—	
	Milk used.	Cheese made.		Patrons.	Cows.	Yield of milk.	Value of product.		Opening.	Closing.
	lb.	lb.	$			lb.	$ c.	$ c.		
1889....	969,574	92,593	8,658	55	349	2,782	24.84	157.07	May 4	October 30
1888....	931,301	88,602	8,184	57	348	2,673	23.49	143.38	" 5	" 24
1887....	938,853	89,062	9,388	58	345	2,719	27,19	162.75	" 4	" 27
1886....	850,264	82,755	7,654	49	308	2,761	24.86	156.48	" 7	" 29
1885....	975,315	94,694	7,688	59	346	2,818	22.22	130.78	" 4	" 29
1884....	913,402	89,134	9,319	51	339	2,692	27.46	181.10	" 3	" 30
1883....	849,915	84,272	8,802	51	305	2,784	28.83	171.25	" 3	" 30
1883-9..	919,909	88,834	8,518	54	335	2,746	25.43	156.62	May 4	October 28

The average of cheese made per factory does not show any striking variation from year to year, the lowest being 82,755 lb. in 1886 and the highest 94,694 in 1885. The

*The total number of factories reporting statistics for the year 1889 was 577, but returns have been received from 38 factories since the above estimates were computed.

greatest value of cheese per factory was realised in 1887, when it reached $9,388, or $730 more than in 1889. The number of patrons per factory, as well as the number of cows, show a pretty constant increase, but in yield of milk and value of product per cow the figures are less encouraging. The average return per patron was for the seven years $156 62, ranging from $181.10 in 1884 to $130.78 in 1885. The return for 1889 was slightly above the average. The factory season has been pretty constant during the seven years, the average opening date for all factories ranging from May 3 to May 7, and the average closing date from October 24 to October 30.

The table which follows presents an interesting series of comparative averages for factories, classified by county groups.*

Districts.		Average No. of days worked.	Quantity of—		Value of cheese.	No. of—		Average per cow.				Milk to make 1 lb. of cheese.	Value of cheese per 100 lb.	Value of product of 100 lb. milk.
								Yield of milk per—		Value of product per—				
			Milk used.	Cheese made.		Patrons.	Cows.	Seas'n	Day	Seas'n	Day			
			lb.	lb.	$			lb.	lb.	$ c.	c.	lb.	$ c.	c.
Lake Erie	1889..	154	895,015	83,800	7,642	68	334	2,682	17.4	22 90	14.9	10.68	9 12	85.4
	1888..	155	974,062	92,101	8,628	78	359	2,712	17.5	24 02	15.5	10 58	9 37	88.6
	1883-9	157	887,551	84,394	8,079	69	322	2,756	17.5	25 09	16.0	10.52	9 57	91.0
Lake Huron.	1889..	136	1,010,109	95,246	8,800	83	393	2,568	18.9	22 37	16.4	10.61	9 24	87.1
	1888..	136	1,023,960	95,386	8,926	94	405	2,526	18.5	22 02	16.1	10.73	9 36	87.2
	1883-9	141	1,019,542	96,574	9,371	84	386	2,641	18.8	24 28	17.2	10.56	9 70	91.9
Georgian Bay.	1889..	130	626,989	59,646	5,457	50	247	2,544	19.6	22 14	17.0	10.51	9 15	87.0
	1888	130	670,582	63,391	5,754	59	288	2,325	17.8	19 95	15.3	10.58	9 08	85.8
	1883-9	131	560,769	53,993	5,135	51	230	2,438	18.7	22 33	17.1	10.39	9 51	91.6
West Midland.	1889..	165	1,545,984	144,797	13,605	75	506	3,056	18.6	26 89	16.3	10.68	9 40	88.0
	1888..	160	1,547,717	144,812	13,752	84	521	2,973	18.6	26 42	16.6	10 69	9 50	88.9
	1883-9	165	1,422,193	134,674	13,246	74	474	3,000	18.2	27 95	17.0	10.56	9 84	93.1
Lake Ontario.	1889..	152	725,992	69,438	6,506	51	266	2,731	17.9	24 48	16.1	10.46	9 37	89.6
	1888..	151	735,277	70,476	6,389	57	283	2,598	17.3	22 57	15.0	10.43	9 07	86.9
	1883-9	151	746,250	72,375	6,790	56	274	2,724	18.0	24 78	16.4	10.31	9 38	91.0
St. Lawr'nce & Ottawa.	1889..	155	793,080	77,261	7,207	40	302	2,626	17.0	23 86	15.4	10.26	9 33	90.9
	1888..	154	841,156	81,145	7,375	44	340	2,475	16.1	21 70	14.1	10.37	9 09	87.7
	1883-9	154	808,531	79,482	7,542	42	316	2,559	16.6	23 87	15.4	10.17	9 49	93.3
East Midland.	1889..	157	883,568	86,516	8,269	44	309	2,859	18.2	26 75	17.0	10.21	9 56	93.6
	1888..	156	848,506	83,142	7,568	46	311	2,730	17.5	24 35	15.6	10.21	9 10	89.2
	1883-9	159	874,012	86,869	8,233	45	309	2,829	17.8	26 64	16.8	10.06	9 48	94.2
The Province.	1889..	155	969,574	92,593	8,658	55	349	2,782	17.9	24 84	16.0	10.47	9 35	89.3
	1888..	153	996,533	94,893	8,787	61	373	2,673	17.4	23 97	15.4	10.50	9 26	88.2
	1883-9	156	952,040	91,997	8,837	56	347	2,744	17.6	25 47	16.3	10.35	9 61	92.8

The average factory, it will be observed, differs widely in the several districts, the highest figures being shown for the West Midland counties and the lowest for the Georgian Bay group in respect of length of season, quantity of milk used and cheese made, and the value of cheese. The Lake Huron counties stand next to the West Midland in the quantity

*The averages for 1889 in this table are derived from the total returns received; the averages for the preceding years are based on the statistics of factories which gave the average number of cows whose milk was supplied.

and value of product, although the working season in 1889 was 19 days shorter than the average for the province. The eastern counties of the province still continue to show a larger percentage of cheese product from milk than the western counties, the St. Lawrence and Ottawa group showing 10.26 and the East Midland 10.21 lb. of milk to make a pound of cheese, against 10.68 in the West Midland and Lake Erie counties, 10.61 in the Lake Huron and 10.51 in the Georgian Bay, the average for the province being 10.47. The highest average yield of milk per day per cow is claimed by the Georgian Bay counties, being 19.6 lb., while the lowest is recorded for the St. Lawrence and Ottawa counties, 17.0 lb. The average yield for the season ranges from 2,544 lb. in the Georgian Bay counties to 3,056 lb. in the West Midland; but the season in the latter group was 35 days longer than in the former. For the whole province the average yield of milk per cow last year was 2,782 lb. for the season of 155 days, being 38 lb. more than the average of the seven years 1883-9 for the season of 156 days.

BUTTER.—It does not appear that the creamery system is establishing itself as part of the dairy industry of Ontario. The total number of creameries in operation last year was 33, of which 30 have made returns to the Bureau, the statistics of which are given in Table VIII. The following table gives the number of creameries making full returns for each of the seven years 1883-9, together with the average per creamery of patrons, cows, butter made, value of butter, value of product per cow, average date of opening and closing and average length of working season:

Year.	No. of returns.	Average per creamery of—				Value of product per cow per—		Average date of—		No. of days worked.
		No. of patrons.	No. of cows.	Butter made.	Value of butter.	Season.	Day.	Opening	Closing.	
				lb.	$	$ c.	cts.			
1889...	17	90	399	36,988	7,649	19 60	14.29	May 15	Oct. 21	137
1888..	14	101	423	33,440	6,769	16 00	12.69	" 16	" 11	126
1887...	25	109	468	37,270	7,563	16 17	12.65	" 16	" 15	128
1886...	20	82	379	30,803	6,023	15 89	12.41	" 19	" 30	128
1885...	8	84	436	34,122	6,751	15 48	11.16	" 14	" 25	139
1884...	5	67	318	23,658	5,143	16 16	13.71	June 3	" 20	118
1883...	5	56	228	18,977	3,924	17 21	14.50	May 21	" 9	119
1883-9.	.....	91	403	33,222	6,723	16 67	12.85	May 18	Oct. 16	130

It will be observed that the average number of patrons and of cows whose milk or cream was supplied is considerably higher for creameries than for cheese factories, the average number of patrons of creameries for the seven years being 91 as against 54 for cheese factories, and the average number of cows being 403 as against 335. The average value of product, however, was for creameries only $6,723 in the seven years, against $8,518 for cheese factories. But this comparison is less marked for the year 1889, when the value of butter product was $7,649 against $8,658 for cheese product, although the value of the daily output per factory was almost equal. It will also be observed that the value of product per cow for the season and per day was considerably less for creameries than for factories, the figures for the seven years standing $16.67 for creameries and $25.43 for factories, or 12.85 cents per day for the former and 16.3 for the latter. For the season of 1889 the figures are closer, the value of product per cow for the season being $19.60 for butter and $24.84 for cheese, or 14.27 cents per day for butter against 16 cents for cheese. The working season of creameries is also much shorter than for cheese factories, the average for the seven years being 130 days for the former and 156 for the latter. For the year 1889 the working season of creameries was 137 days, as against 155 days for the cheese factories.

Of the thirty factories which made partial returns last year, seven gathered cream by weight, four gathered milk, three others were a combination of cheese and butter factories, while the remaining ones quoted cream gauged in inches. The seven creameries made 285,749 lb. of butter from 1,183,670 lb. of cream, and the value of the product was $60,486.28. The four creameries which manufactured their milk made 87,963 lb. of butter, valued at $18,135.34, from 2,136,078 lb. of milk. It required 4.142 lb. of cream in the first lot of creameries and 24.28 lb. of milk in the second to make one pound of butter, being an equivalent of 5.86 lb. of milk to 1 lb. of cream. The average value of the milk, computed from the value of the butter product, was 84.9 cents per 100 lb., as against 89.3 cents per 100 lb. for value of cheese product of the same quantity of milk.

The three combination factories used a total of 3,214,501 lb. of milk, the produce of which was 79,048 lb. of butter, valued at $16,974.41, and 219,808 lb. of cheese valued at $14,405.73, or a total value of butter and cheese product of $31,380.14. This system resulted in an average of 97.6 cents per 100 lb. of milk, and $24.61 per cow per season or 14.8 cents per cow per day. The average length of the working season was 166 days.

Ensilage.—The May bulletin stated that, owing to the prolonged drouth of the previous two summers, and the discussion of the fodder question at many farmers' institutes and similar gatherings, considerable attention was given to the question of ensilage. In the western part of the province the good crops of corn and roots in the previous year, along with the cost of silos and labor, operated against its adoption; but in the eastern part, where dairying is the most productive farm industry, and where the effects of drouth have been most severely felt, it was more likely to be adopted. Wherever ensiled fodder had been given a fair trial the reports show that it was almost invariably successful. Mammoth Southern sweet corn appears to have been the favorite crop grown for the purpose. The July bulletin, referring to the subject of provision against drouth, stated that there appeared to be a decided impression that the silo would come into very general use before long. The chief difficulty was to get some one in each locality with enterprise enough to give ensilage a full trial, for which many seemed to be anxiously waiting. The farmers of the eastern counties were adopting the practice more generally than those of the western counties, although in the latter also the subject was being generally discussed, and correspondents reported that many intended building silos. A correspondent in Pickering township wrote: "Ensilage is something for the future; farmers have not yet taken hold of it in this section, although they are reading and thinking, and asking opinions concerning it. I think that if they could be led to see its advantage they might well abandon turnip growing."

Bees and Honey.—The reports concerning the apiary were upon the whole very favorable. Not a single correspondent made mention of any disease among bees. Notwithstanding the cold weather of the latter part of May, and the wet and backward state of the first half of June, the honey product for the year was very good, averaging about 75 lb. per colony, spring count, and covering a range of from 25 to 250 lb. for each original hive. The bees went into winter quarters with an abundance of supplies. Swarming was very successful, stocks as a rule being doubled. Some apiarists reported that there was too much swarming with a certain class of bee-keepers for good wintering, as some in the business trebled and quadrupled their stands. The market for honey was good, the product being generally taken up readily at satisfactory prices.

THE SWINE INDUSTRY IN ONTARIO.

A report on the swine industry in Ontario was prepared and issued by the Bureau during the month of November, under the following memorandum of instruction on the subject from the Minister of Agriculture to the Secretary of the Bureau :

MEMO. RE THE SWINE INDUSTRY.

It has been the general practice in Ontario, for many years past, to make pork in the pen by feeding concentrated and expensive foods and by keeping through the winter a considerable number of hogs. It has been fairly well demonstrated, however, that at the price pork has commanded during the past eight or ten years there has been but little profit in this mode of feeding. It is believed that, by following the practice now well established in different parts of the United States, and to some extent in Ontario, hogs may be profitably raised and sold between the middle of March and the first of November, and that their food should largely consist of growing crops in the field, such as clover, mangels, etc. The object of enquiry, therefore, should be to ascertain what is the practice of the most successful breeders and feeders in this line, and also in reference to the marketing and sale of hogs.

First, to ascertain from our local packers and men engaged in the trade, the extent of importation from the States, and the price paid during the past four or five years. (2) As to the preference, if any, given to Canadian over American pork in the English markets, and the opinion of dealers as to the permanency of the market.

Secondly, to ascertain from breeders and feeders the best practice employed. (2) As to what time young pigs should be littered. (3) Mode of treatment in early life, including the weaning and subsequent feeding of pigs. (4) What additional food is required while hogs are pasturing on clover, and as to the mode of feeding for final preparation for sale.

CHARLES DRURY,
Minister of Agriculture.

LETTER OF TRANSMISSION.

To the Hon. Charles Drury, Minister of Agriculture :

Sir,—I have the honor to present herewith, in accordance with your instructions of the 12th September, a report on the most approved methods of breeding and feeding swine for the production of bacon and hams in the province of Ontario. The views of a large number of breeders, feeders and dealers have been sought on the subject, with special reference to the best means of producing the quality of meat required to suit the tastes of consumers, and also to the greater economy in growing and fattening hogs which is forced upon farmers by new methods of feeding pursued in some parts of Ontario and elsewhere. The day of the fat hog has gone by, excepting in the lumber woods and other places where large numbers of laborers are employed, and instead of carcasses of 350 to 500 lb, 90 per cent. of which is white, the market now calls for carcasses of 110 to 160 lb. of firm meat, well streaked with lean and fat. For this quality of meat there appears to be a steadily growing demand in our towns and cities, as shown by the figures of pork packers, and an almost unlimited demand in the markets of England. How to produce it in Ontario, just of the right quality and at a remunerative cost, is a matter which calls for careful inquiry and consideration. The market is not simply for a hog or carcass of certain weight ; if the meat is not firm and fleshy, containing a large proportion of lean, but is a mass of fat, the hog of 200 lb is as unsuitable as one of 300 or 400 lb. Just now one of the largest packing establishments in Canada (Wm. Davies & Co., of Toronto) is obliged to get its supply of live hogs from Chicago, because Canadian hogs of even moderate weight are too fat to make the cured meats required for the English markets. Nothing can persuade the London provision men to deal in the "gloriously fat" meat, and the firm referred to have informed me that some fat Canadian bacon which they have in London at the present time is being sacrificed to the extent of two cents per pound because of this feature. In England as well as in the towns and cities of Ontario the

brand "choicest quality" means *well-fed lean meat*; and until our farmers breed and feed so as to produce that quality of meat they cannot hope to supply the market. The extent to which they fail in meeting the wants of the home market is shown by the figures of the following table, which gives the values of exports of Canadian production and the values of imports for consumption for the five fiscal years 1884-8:

Year.	Exports.	Imports.		
		Dutiable.	Duty.	Free.
	$	$	$	$
1884.....	873,988	1,808,599	319,600	63,200
1885.....	765,298	1,652,018	308,558	59,602
1886	687,073	1,253,276	301,518	68,229
1887.....	961,177	974,244	220,505	73,332
1888.....	691,938	1,337.277	279,149	75,422
Totals.....	3,979,474	7,025,414	1,429,330	339,785

The value of total imports entered for consumption in the five years was $7,365,199, being $3,385,725 more than our total exports; or, if the duty be added, the excess of imports in value is $4,815,055.

The next table gives the aggregate of imports by quantity and value of swine and their products entered for home consumption in the same five years, as follows:

Imports.	Quantity.	Value.	Duty.
		$	$
Swine. ....No.	46,786	389,263	76,034
Lard ....lb.	19,465.495	1,413,882	389,311
Bacon and hams.....lb.	17,431,012	1,629,121	348,620
Pork *.....lb.	61,519,111	3,602,244	615,365
Bristles..... .....lb.	375,636	330,689	Free.
Total.....	.....	7,365,199	1,429,330

* The figures of imports of pork are suggestive of a mistake either of entry or classification.

The number of swine includes 449 valued at $9,096 entered on the free list, doubtless for breeding purposes. There were also imported to be slaughtered in bond 41,155,383 lb. of hogs live weight, valued at $2,044,398, which with the imports for home consumption make a total deficit of $9,409,597 in the five years, being an annual average of $1,881,920; or, if the duty be added, an annual deficit of $2,167,800. It will be noticed that one item of hog product, viz. bristles, is on the free list; the annual value is about $66,000.

The aggregate exports of swine and their products, the produce of Canada, are given in the following table by quantity and value for the five years 1884-8:

Exports.	Quantity.	Value.
		$
Swine ....No.	11,554	40,206
Lard ....lb.	608,534	53,141
Bacon.....lb.	40,612,119	3,483,710
Hams..... .....lb.	2,670,193	247,604
Pork.....lb.	2,443,786	154,813
Total.....	.....	3,979,474

Compared with the table of imports, it will be found that we have had a surplus of bacon and hams in the five years of 25,851,300 lb., valued at $2,102,103; whereas we have had a deficit of pork of 59,075,325 lb., valued at $3,447,431, and of lard a deficit of 18,856,961 lb., valued at $1,360,741. The product of hogs slaughtered in bond, however, was exported almost wholly as either bacon or hams.

The market for live hogs required for packing establishments has been fairly constant during the past six years, as shown by the following table of average monthly prices furnished by Wm. Davies & Co., of this city.

	1884	1885	1886	1887	1888	1889
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
January	5 75	4 50	4 50	4 63	5 40	5 38
February	6 50	5 00	4 75	4 75	5 40	5 12
March	.....	4 75	4 75	5 25	5 40	5 25
April	.....	5 25	4 75	5 63	5 63	5 50
May	6 00	5 25	.....	5 75	6 40	5 75
June	6 00	4 75	5 12	5 50	6 50	5 60
July	5 87	5 12	5 50	5 60	6 50	5 62
August	6 35	5 37	5 63	5 75	6 60	5 70
September	6 37	5 25	5 65	5 38	6 25	5 60
October	5 25	5 00	5 30	5 00	5 87	5 40
November	4 75	4 50	4 50	4 90	5 75	.....
December	4 50	4 50	4 50	5 00	5 75	.....
Average	5 73	4 94	5 50	5 26	5 94	5 49

In only one of the six years has the average price fallen below $5 per 100 lb live weight; but the instructive lesson of the table is found in a study of the monthly averages. For the six months October-March the average price of the six years is $5.36 per 100lb, while for the six months April-September it is $5.69. Again, for the three months, November, December and January, when most of the hogs are sold or slaughtered by farmers, the average price of the six years is $4.92, while for the three months July, August and September it is $5.78—a difference in price in favor of the summer months of 86 cents per 100 lb live weight. From this it would follow that the season of most profitable feeding is the early summer, and that the object should be to get the hogs ready for the market in the period of the highest range of prices—say from June to October. But to avoid over-stocking the market in summer or winter, the safer course would be to feed with a view to maintaining a regular supply throughout the year.

It is not possible to warrant the maintaining of good prices for an indefinite or even a definite period; but the quotations which have been given show that during the past five years a certain stability has been maintained in the price of live hogs. If our packers can get and hold the English markets, or if other markets are opened both to them and to the farmers, it is not unlikely that hogs may continue to be bred and fed at a profit for some time to come. But over-production would doubtless be followed by depression, and against the occurrence of such a contingency there is no adequate protection saving what is afforded by a careful watching of the markets. And why should not every farmer study the quotations of his market? Why should he not keep a record of current prices, so that he may observe the tendency and be instructed and guided by it? When prices continue to rule low, as in the case of cereals during the past seven or eight years—consequent upon extension of the areas of production, the construction of railways and the more general use of labor-saving implements—the remedy which naturally suggests itself to the observant farmer is, that he should lessen his output. Had the farmers of Ontario and other countries adopted this plan more generally at the setting in of low prices, the drop might have been arrested. But they failed to read the lesson of the market quotations, and the result is that many have been carrying business on at a minimum of profit, if not at an actual loss. Of course there are other and more potent causes of the agricultural depression, but they do not require to be referred to here.

Twenty-five years ago all pork in this country was cured in winter. Lean meat then became hard and tough as leather in the summer and autumn months, and so the demand was almost wholly for fat hogs. Now, with the use of ice, pork is cured in summer equally as well as in winter, and packers and dealers are enabled to supply the choicest quality of hams and bacon at any season of the year; and so the demand is almost wholly for hogs which produce firm, fleshy meat. How to breed, grow and feed hogs to produce pork of this quality in Ontario is the problem, the solution of which is aimed at in this Bulletin, and I trust that to some extent it may be found to serve its purpose.

The recent outbreak of hog cholera in two or three localities in the counties of Kent and Essex has induced me to append some observations on that disease by Dr. Peter H. Bryce, Secretary of the Provincial Board of Health, who visited the infected districts last week.

I have the honor to be, sir,

Your obedient servant,

ARCHIBALD BLUE.

Toronto, November 18, 1889.

Best Hogs for Bacon and Pork.—Although it is admitted that all breeds of swine possess some individual merit, and nearly all have their ardent supporters, still the reports received go to indicate that the Berkshire is by long odds a warm favorite with breeder and feeders of hogs in Ontario, both for the production of ham and bacon, but especially the former. Next in popularity come the Suffolk, the Chester White, the Poland China, the Essex and the improved large Yorkshire, the last named a breed that appears to be rapidly claiming attention and favor. Many practical pork raisers, however, strongly give the preference to a cross between these breeds, claiming that animals so produced make better hogs, combining many of the good qualities of each, and that thus a superior size may be attained. Considerable difference of opinion exists as to the relative advantages of pure breeds and the grades. The chief points given in favor of pure bred animals are that they mature earlier; and as the amount of flesh produced for the quantity of food given is greater the younger the animal, it follows that they attain the same weight on a smaller amount of food than will a grade, and they are, therefore, more profitable feeders. They are also held to produce meat of a finer quality, and being as a general rule better built animals, their hams are more shapely, their sides deeper and longer, and a uniformity of size and shape is maintained. Grade animals are considered by many to possess a hardier constitution, thus being less liable to disease; but it is also claimed that the pure breeds are all that can be desired in this respect, and that the constitution of animals apart from hereditary causes largely depends upon the food and treatment they receive while young. It would appear that grades are larger eaters, and some consider them not so liable to over-fatness as pure bred animals; but this may possibly be attributed to the fact that while the pedigreed pig is pampered in a pen, the grade is often allowed to roam over the farm at will, with the privilege of "root hog or die." There is little doubt that very profitable general purpose hogs may be bred from carefully selected high grade sows and pure boars of any of the best breeds. This method is believed to detract nothing from the quality of the meat, and at the same time to retain and combine the supposed advantages of both classes. The following quotations from our correspondents fairly well support these views:

Robert Manery, Mersea, Essex: I prefer the improved Yorkshire. I consider that the pure breeds cannot be improved by crossing. They are docile and contented, and put on a lot of flesh in a short time, besides having a perfect frame for bacon and ham.

W. G. Baldwin, Colchester, Essex: After twenty-two years' experience in breeding both for pork and fancy stock, I have found that the Poland China crossed with other breeds give the greatest satisfaction in all respects.

Francis Gifford, Camden, Kent: I am in favor of the pure breeds, although I believe that one cross will often do well.

Charles Chute, Malahide, Elgin: Quite a number of farmers raise Poland Chinas and Chester Whites. The great point in hog culture is to get breeds that will come to maturity at about nine months, weighing 175 to 200 lb. The Berks seem to fill the bill as well as any; they have small bones and produce a good quality of meat.

Samuel Maccoll, Dunwich, Elgin: Medium-sized Berkshires, Poland Chinas and Yorkshires are the best. Every farmer should keep none but pure bred hogs, or any other stock. With the pure breed he can have his ideal; without it he cannot. Pure bred hogs are better feeders, and by feeding the proper kind of food the right way the class of pork desired is got.

F. A. Nelles, Seneca, Haldimand: The Berkshire is my favorite pig, but I often find that a cross with other breeds makes a very hardy pig and a profitable feeder, with an extra good constitution.

Henry Cowie, Seneca, Haldimand: I have found that a good grade sow with a Berkshire boar will raise healthier and more thrifty pigs than will a pure bred animal, although perhaps not so fine a quality of pork.

David Allan, Egremont, Grey: I believe that the improved large Yorkshire will in future become the most profitable breed.

Archibald Thomson, Orillia, Simcoe: The pure breeds are more easily fed, and come to maturity sooner than the grades do. They are free from disease, provided they are not bred in-and-in.

George Raikes, Oro, Simcoe: I consider that in breeding from pure bred animals you have greater certainty as to constitution, quiet feeding habits and a better quality of pork. The prices of the pure breeds now place them within the reach of all, so that there is no advantage to be gained by breeding from uncertain grades.

James Alexander, Ekfrid, Middlesex: I would as soon have good grades as pure breeds, and consider them as good for pork in all respects.

F. W. Fearman, Hamilton: The pure bred Berkshires and Suffolks, or crosses of these, run too much to head and shoulders, and make bacon that is too fat for the trade. Hogs are wanted that are small in head, light in shoulder and deep and long in the side, with a good proportion of ham.

John Snell's Sons, Chinguacousy, Peel: Pure breeds should be fed moderately and have abundant exercise; they are not then liable to disease.

Ormsby & Chapman, Toronto, Peel: We find the improved large Yorkshire a very good hog. We prefer a cross between two pure breeds to a simple grade.

W. Davies & Co., Toronto: Our experience is that the various breeds of swine in Ontario are all too fat, except perhaps the improved Yorkshire, and these have been used for so short a time that we have hardly any experience of them, but their appearance indicates that they will produce a long, fleshy carcass, such as is now demanded by dealers and consumers. This opinion is corroborated by English and Irish bacon curers and provision merchants. The bacon curing industry has increased in Denmark and Sweden during the last few years by leaps and bounds. The native hogs were not suited to the requirements of consumers, hence bacon curers in these countries have been instrumental in introducing large numbers of the improved large Yorkshire boars, with the result that the progeny of these crossed with the native sows has produced a carcass which exactly fills the bill.

Richard Bowden, Cumberland, Russell: The Berkshire is in my opinion the best for bacon and hams. Pure breeds have this advantage, that they mature earlier and cost less to fatten than grades; they are always ready to feed. I keep a constant supply of charcoal in the feeding troughs.

R. R. Booth, Himsworth, Parry Sound: Yorkshire for bacon and Berkshire for hams. It takes less to make pork of pure bred hogs than of common breeds, and in my opinion the quality of the pork is better.

Breeding and Care of Pigs.—The opinion that a sow should not be allowed to breed until she is at least one year old is a very general one, and well substantiated; otherwise her growth is apt to be stunted, and the constitution of her young very likely to be impaired. It is not usually thought desirable to keep sows for breeding purposes after the age of three or four years is reached, as in most cases they become mischievous and unmanageable after that age; they may, however, continue breeding until they are nine or ten years old. Two litters of pigs (some think one only) should be raised in a year, one in March and another in September. If a sow be bred at a rate so as to produce say five litters in two years, harm to herself may result, and her young are likely to deteriorate. From about two weeks before farrowing it is regarded as desirable that the sow's food should not be of too stimulating a character, avoiding much grain, and feeding clover, roots, bran, middlings, etc., and also that she should be allowed sufficient exercise in a pasture field. She should be kept in good condition, however, but not too fat. As the time for farrowing draws near it is advisable to keep her isolated from the other pigs, and free from worry and excitement; and if at the same time she is allowed to become accustomed to her new quarters, she will probably take kindly to them when the time

arrives. Some think it better to allow the sow to construct her own bed where she may desire in the open air, if the weather be favorable; but the opinion is more general that a well-built and warm pen should be provided for her, with as little bedding of chopped straw as is necessary to prevent her from laying on her young. With this end in view, many consider it advisable also to nail a strip of planks partially around the pen at about six or seven inches above the floor, under which the young pigs may creep when their mother lies down. Care must be taken to keep the young pigs sufficiently warm, as they are very susceptible to cold; and when the weather is at all severe it is often necessary to remove them to a warm p ace as soon as born. After farrowing has taken place the sow should receive nutritious but easily digested food—many suggest that it be of a sloppy nature; at first it is thought well to feed somewhat lightly, gradually increasing the amount. Feverishness must be guarded against both in the mother and her young; and all the pure air and sunshine possible should be allowed them. The young pigs should be taught to feed themselves as early as possible; some suggest that a separate compartment be provided to which only the young may obtain access. Their trough should be a shallow flat-bottomed one. The food of the young pigs should consist first of milk, then of middlings, oatmeal or barley meal mixed with warm milk. They may be weaned gradually at the end of six or eight weeks, and a little oil meal and also corn and pea meal may then be added to their food. Their growth should now be pushed forward as fast as is consistent, and they should be fed frequently, say about five times a day, but only given as much as they will eat up clean each time; a little salt may at times be added with advantage. Care respecting regularity of feeding should be observed, and as much variety given as is practicable. Green oats pulled by the roots are an excellent form of green food, and it is well to have a pasture field or yard provided for the pigs to run in.

John Coulter, Mersea, Essex: If you have plenty of feed allow the sow to wean the pigs herself.

Reuben C. Taylor, Tilbury, Essex: A good grade sow is likely to have a greater number of pigs at a birth, according to my experience.

W. G. Baldwin, Colchester South, Essex: If the appetites of the young pigs are fully appeased, and they are allowed plenty of room for exercise, they will not long mourn the loss of the dam.

Horatio N. Scratch, Dosfield, Essex: After farrowing feed the sow sparingly on slops for three or four days, gradually increasing the amount until the pigs are about a week old; after that time she may be fed to her full capacity.

S. Mayhew, Camden, Kent: Feed milk and shorts while the pigs are on the sow, and wean when the sow begins to show an indisposition to allow the pigs any further nourishment.

Samuel Maccoll, Dunwich, Elgin: A sow might be bred when about eight months old, so that she would farrow when about a year old. She should be placed a few weeks before farrowing in a house or pen with a yard attached, the bed apartment of which should be roomy, and all around the wall a board placed six or eight inches from the floor to prevent the sow from getting her pigs against the wall; the bed to be of cut straw. She should bring forth two litters a year, in September and March. The yard should be large enough to graze the sow in summer. Wean the pigs at five weeks old and feed with milk and a little mixture of ground wheat tailings.

John A. Hankinson, Malahide, Elgin: Generally a sow's usefulness expires in three years. Large sows get too heavy and clumsy, grow more troublesome, and do not drop even litters. After farrowing they should be lightly but regularly fed for the first week or two on milk and wheat bran, with some roots or vegetables: gradually increase with heavier feed, such as barley or pea meal. Pigs may be taken from the sow at six to eight weeks. Give them milk as often as possible, with some wheat bran or cooked meal, feeding often, but not too much at a time.

J. S. Wyckoff, Woodhouse, Norfolk: A sow can be bred twice a year, spring and fall, but not profitably after about four years of age, for her own constitution then becomes weakened, while the young are affected in the same way.

D. Schooley, Bertie, Welland: I prefer feeding slops with as much milk as possible; also shorts or chopped oats and barley, but very little pease.

James Alexander, Ekfrid, Middlesex: After the first week the sow should be liberally fed on a mixture of pease and oats, bushel for bushel, ground together and scalded with hot or boiling water a short time before feeding. By the time the pigs are five or six weeks old, if they have been fed in a small trough out of reach of the mother, they will scarcely know her loss, but she should not be taken from them all at once. All hogs should have a little salt in their food, and be regularly fed three times a day.

W. Davies & Co., Toronto: We have no doubt that the sow at farrowing does just as well in pasture during mild weather as with care and attention in a pen; and common sense will tell that at other times she should be housed comfortably a week or two previous to farrowing. A sow may be safely bred twice a year, in the spring and fall. If she has large litters of strong healthy pigs she is invaluable, and should be kept just as long as she continues to produce them; and she may do this once a year when twice would be

too great a drain on her strength. The sow and her litter should be housed comfortably with a good bed, and kept clean and dry. This will involve labor and care; and if a farmer is not prepared to give that he had better keep out of the business. The sow should be fed liberally with meal and dairy slops.

Platt Hinman, Haldimand, Northumberland: Give breeding sows plenty of room, a scanty bed, and generally watch them, and breed to farrow in March and September. It is not profitable to keep breeding sows after they get old and heavy, because they are apt to lie on the pigs and also to eat them. Light young sows make the best and most attentive mothers. After farrowing I give them milk, thickened later on with light grain, and let them pasture. Wean the pigs at six weeks, preparing by feeding them at a trough with the sow. Take the sow away and feed them as before, but letting her in with them once a day for four or five days long enough to let the pigs suck; then shut the pigs apart and give light, weak feed. Never feed on grain when young, as that contracts the stomach and makes them dainty; but always increase the strength of the food as age increases and near fattening time.

S. Kettle, Glamorgan, Haliburton: I never count on anything great in the sow's first litter, nor do I buy pigs of that litter if I know it. After the first week I give the sow plenty of skim milk, shorts and bran, turning her into pasture for an hour or two each day. I castrate all boars at a month old, and wean at five weeks, after which time the pigs will feed themselves at the trough with the sow.

C. G. Seay, Tyendinaga, Hastings: I generally prepare a sow for breeding purposes when she is eighteen months old; I allow a year after the first litter, and then breed every spring and fall if possible. In my experience a sow will rarely continue to be a good breeder after she is four years old.

Course of Feeding for Young Hogs.—The enquiries relating to the feeding of pigs with a view to the increase of their eating capacity, their general development and the getting of them ready for the market has evoked such a variety of opinions as to prove that the swine industry is but an experimental stage in Ontario. It would seem as if clover takes the chief place in the economy of hog raising; certainly it is the most generally recommended article of diet. Skimmed milk and whey are also highly spoken of as a good food for newly weaned pigs, and are urged as of benefit at all stages of feeding. Shorts, ground oats or other meals are also used with the milk or whey, as well as chopped stuff, according to the fancy of the breeder. The importance of plenty of fresh water, more especially at noon, is pointed out by several correspondents. In the cold weather the cooking of certain foods is recommended, and among the articles to be warmed are potatoes, pumpkins and the various preparations of grain. Some correspondents advise that the feeding of pease, corn or other grains be left until the last month or two, but there are a large number who prefer a little grain all along. Kitchen slops are recommended for thinning the feed, and appear to be relished by the animals when given that way. A number of correspondents assert that the slops and grain or chopped stuff mixed together are better for feeding purposes if allowed to lie for two or three days and slightly ferment before being given to the pigs, while others contend that perfectly sweet food gives the best results. Pease and water in the last stage of feeding are urged by a number as giving firmness to the flesh, and many prefer soaked pease or corn to the ground grain. Several correspondents also say that the young hogs would be benefited by having the run of the orchard. There is a decided difference of opinion as to the best time to have pigs littered. There are some who recommend the fall, but the majority appear to be in favor of March or April, and the placing of the pork on the market at from five to nine months. It will be observed that the leading pork-packers desire to handle young animals showing a fair amount of lean rather than ponderous carcasses enveloped in fat. About six weeks of special feeding is the average time given for getting a pig in prime condition for the market. Some advise a considerably longer period, while others claim that the animal should be so fed all along that it will be ready for the butcher at almost any notice. In one thing all seem agreed, and that is that pigs set apart for breeding purposes should be fed so as to develop bone and muscle and not be allowed to fatten. Plenty of exercise, with clover, roots and grain (the latter not too freely given) is the regimen laid down for this important class of swine. One correspondent tersely voices the views of all when he says that breeding sows should be kept thrifty without being allowed to get fat. The following extracts are given as representing the courses pursued for feeding and fattening hogs for market. It will be noticed that even in the same county similar methods do not always prevail. As to which of the various modes given below are the best, opinions will always differ. But it may be that a comparison of these systems will encourage experiments which may ultimately lead to a plan suitable for general adoption, or easily adapted to the somewhat varying circumstances of the different sections of the province.

Henry Davies, Mersea, Essex: The best way for growing hogs is to let them run in clover pasture and give plenty of good slop, increasing its richness as you near the time of putting up in pens to finish for market. Be careful not to feed the hogs too much in the start, until eating and digesting capacity has been fairly developed.

A. Papineau, Rochester, Essex: Feed young pigs with shorts and milk, and they should be allowed to run in the clover pasture. Eight months is about the best age to begin special feeding, and the animals should be fed three times a day. Pigs for breeding purposes should be kept dry and be given shelter. They should not be allowed to sleep in the open field.

Horatio N. Scratch, Gosfield S., Essex: I find boiled pumpkins mixed with chopped oats, pease or barley, as good a food as I have tried for increasing the capacity of the young pig to receive food and keep up the appetite. For fattening I would begin with spring pigs at seven or eight months old, but fall pigs I would winter over till next year. Feed three times a day regularly at fattening time, giving corn night and morning with slops for noon. Pigs intended for breeding purposes should be kept in a thrifty condition, but not fat.

George Robinson, Romney, Kent: We have no desire to increase their eating capacity, as good pork cannot be made on green food alone, neither would it be profitable. I would start to feed spring pigs for the market as soon as weaned, and fall pigs in the following June. Soil with clover, green pease and mammoth sweet corn, mix with dry grain and finish with corn. Let pigs intended for breeding pasture, and feed with oats, pease and corn (ground), and bran and shorts if it can be got cheap.

Alex. Young, Harwich, Kent: There is nothing better for young pigs, no matter how they are to be finished off, than skimmed milk, shorts, oats, ground pease and some corn. A hog should be ready for killing at from nine to twelve months. If he comes in September or October he should be ready in August or September; if he comes in March he should be fit in December. They should have some grain every day after weaning, and during the last two months all they can eat, along with mangels, clover, green corn, etc. Pigs for breeding should not have so much grain, but plenty of exercise.

John A. Hankinson, Malahide, Elgin: Give the pigs a free run in a red clover pasture or orchard, with all the milk and slops from the kitchen, mixed with bran and ground screenings purchased at roller mills. Some roots can be given every week as they are thinned out, and if the root field is next the hog pasture it should be seeded to clover for next year's soiling.

Samuel Maccoll, Dunwich, Elgin: Young pigs should be fed on coarse chopped feed and milk and grazed on clover pasture. When about four months old they may be turned into a plot of pease when the pods are well filled; or, better, cut and feed a sufficient quantity three times a day at regular intervals—say at 7 a.m., 1 p.m., and 7 p.m.

W. G. Sanders, Yarmouth, Elgin: The pigs intended for market are given a run in clover or a small plot of pease, and I increase the feed with pease and cornmeal, keeping the mess sloppy so as to give the pigs a good appetite. I feed three times a day. The pigs I keep for breeding purposes I feed twice a day with shorts and ground oats, and a run of pasture.

L. Buckton, Crowland, Welland: Feed milk and kitchen slops mixed with bran to young pigs. The bran and milk should be mixed two or three days before feeding. If for pork, start to fatten at five or six months; if for hams and bacon at ten or twelve months. Having pigs in good clover, I would increase grain feed from two to three times a day at regular hours, and feed just what they will clean up and no more. Let pigs for breeding have plenty of exercise, and be fed twice a day to keep them in thriving condition without burdening them with fat.

W. S. Howell, Sombra, Lambton: When fully weaned I feed bran, ground oats and barley, with milk and kitchen slops, and a run on grass will develop stomach capacity. In winter, in lieu of grass, roots (mangels or carrots) and clover cut fine and soaked, or even dry clover hay thrown to them, make an excellent addition to their other feed. Pigs should at all times be kept in good growing condition, but not fat, till about two months before killing, then be fed more corn or pease with less oats or barley and less coarse food, and have a less extended run. They should be kept quiet and fed three times a day. The care given growing hogs does very well for those intended for breeding. They should not become fat nor too lean. When carrying young overfeeding must be carefully avoided.

David Smith, Brant, Bruce: Bran and shorts with a little pea meal properly scalded, and made thin with milk, is the best feed I know of for young pigs. I feed from the time they are four weeks old until they are fit to be killed, at say five or six months old. I give them all the boiled pease they will consume, and the trouble is they will get too fat. Pigs for breeding should have plenty of liberty and be fed sparingly.

James Tolton, Brant, Bruce: After weaning give the young pigs plenty of cow's milk mixed with bran and middlings, increasing the solids as the pigs get older, with plenty of grass if in the summer, and in the winter pulped or cut turnips, mangels or carrots. I prefer to begin feeding for market at five or six months. I feed them three times a day with dry pease and plenty of water, with a change once a day of beans, and middlings or roots until near the finish. For pigs intended for breeding I allow plenty of grass and plenty of exercise, with the slops from the kitchen and a little bran. In the winter or cold weather they need some pease, corn or barley meal.

W. J. Winter, Holland, Grey: I never owned any young pigs that did not have a fearful eating capacity. The only trouble is, enough of cheap food. Bran, shorts and milk, with turnips or grass, is best for young pigs. Grain is hurtful, especially pease, until after four months old. I begin to feed for finishing when about six or eight months old. I simply give soaked pease in addition to the above-named food, and feed three times a day. I let breeding pigs run at large, and give plenty of the food already mentioned, omitting the pease.

Archibald Thomson, Orillia, Simcoe: The course I have always pursued is to get the pigs come in the month of March, and let them out to pasture after the first of July. Give them milk and slops, with a little chopped pease and oats night and morning. After harvest, when they have gathered the fields, I put

them under shelter and feed them morning, noon and night, and they generally make from 200 to 250 lb. of pork. I never keep spring pigs over winter except for breeding purposes, and these I let run in the yard and feed them with a few pease, oats, turnips and other roots, but always let them into their house at night.

George Raikes, Oro, Simcoe: From the time of leaving the sow I feed the young pigs with a variety of foods, such as pease and barley meal, roots, milk, etc., turning them out to pasture as soon as there is any length of grass, and feeding them a small ration of grain daily (pease scattered on the ground). I generally save a few acres of pease unpulled for them to feed upon after they have cleaned off the stubble, putting them in a pen to finish off when about seven months old. I give the young pigs intended for breeding similar treatment up to the time of closing them in pens.

Lewis A. Price, Dereham, Oxford: I allow my young pigs to run all summer in the orchard feeding on the grass and clover, and feed them some wheat bran, mixed in sweet whey from the cheese factory. When five to seven months old I pen them up in lots of five or six each, and force them on with pease soaked in the whey, barley meal, wheat-shorts or corn, and such food as I grow on the farm. In the winter keep them in a warm, sheltered place, and do not slop their food, as it freezes. For breeding, feed them for growth, but not to fatten them.

James Laidlaw, jr., Guelph, Wellington: For pigs dropped about March or later I would suggest the following course of feeding: A few weeks after being weaned the clover will have had a good start, and they ought to be turned on it, but allowed to come in once or twice daily for a feed of slop composed of mill feed or chopped grain, until they have reached the proper weight for finishing. For fall pigs mangels are almost indispensable for winter-feeding, as hogs seem so much fonder of them than of any other root crop. At about five months I would prepare for market, as they will have then attained a weight of about 125 lb. I would then feed less fodder and more grain, three times a day. I would feed pigs for breeding the same as for market, with less grain.

F. W. Fearman, Hamilton: From a mercantile standpoint I would recommend the feeding of hogs with the view of getting them ready for the market at not more than seven months old, and to weigh 160 to 180 lb. dressed.

Wm. Davies & Co., Toronto: Whenever the weather is suitable, the pigs when two or three weeks old should have liberty, as this will develop bone and muscle. They should be fed with considerable bran and shorts. Pigs should be put up to feed at about four months, and when this is done, if the best results are to be obtained, special dry sleeping places are necessary.

H. H. Spencer, Whitby, Ontario: Feed bran and shorts to young pigs, and have a good clover field for them to run in. Keep them in good growing order for five months, and for feed for finishing I would recommend barley meal or fine shorts mixed with mangel-wurzels boiled, and feed three times a day. Allow pigs meant for breeding to run out so as to keep in a good healthy condition.

James Parr, Cartwright, Durham: Sour milk thickened with shorts or ground pease is, in my opinion, the best and cheapest feed that can be given to young pigs, especially if intended for pork when they are eight or nine months old. They should be well fed from the time of weaning, morning, noon and night.

A. Hagar, Plantagenet, Prescott: Pasture on green clover and feed skimmed milk and buttermilk mixed with bran, shorts and a little ground pease.

Jonathan Cross, Caledonia, Prescott: I find pigs do well turned out in clover or grass at say six weeks, and supplemented by three feeds daily of almost any kind of grain, either whole or ground, but the latter preferred. Our young pigs, as a rule, are littered in May, and we sometimes commence to fatten about the first October, but we generally keep some over the winter and fatten in the spring for the Montreal summer market, buyers preferring them not very fat. We keep sows for breeding in good growing condition.

James Simpson, Osgoode, Carleton: I feed corn meal and milk at first, and to make bone and muscle a few dry pease. I feed all they can eat up clean from the time they are weaned, and generally four times a day, and sometimes add a little green western corn. I feed on dry pease and oats till near farrowing time, and then give them provender steamed with warm water.

Dennis Howkins, Eldon, Victoria: After the pigs are weaned feed milk and shorts three times a day, giving them as much as they will clean up. I begin to feed for the market at six or seven months, and would recommend pease at that period, as it makes the solidest pork, feeding three times a day also. To sows that are kept for breeding purposes we give pease in the evening and roots in the morning.

Joseph H. Taylor, Otonabee, Peterborough: I would feed young hogs on clover with whey or milk, and some pollards or shorts from the mill. At about six months I would close them up, keep them clean, and feed them three times a day. I have found ground rye steeped to give good satisfaction. Pigs intended for breeding should be fed well, but have plenty of exercise.

Joseph Alton, Strong, Parry Sound: Give the young pigs a clover lot or mixed grasses, and the freest possible access to water, and feed milk and shorts or other grain matter such as barley boiled well, and I will guarantee that your pigs will grow. I put up my pigs about the first of November and kill about Christmas or New Year. I feed all my pigs with mangels or field carrots and small potatoes in the fall until fattening time, and they keep growing right along. I feed the sows roots and a little grain and they are all right. A breeding sow should not be very fat.

Field *v.* Pen Feeding.—The greater part of those who have given an opinion on the question of pasturing hogs as compared with feeding in the pen for the best development of pork for the market and for family use are in favor of allowing the animals to run in clover, grass or the orchard during the summer, and then giving them six weeks or so of special feeding (chiefly of grain) in the pen for finishing off. A few correspondents champion the pen all the time, while some object to the close pen in any case, holding that an occasional run in a small yard is an actual necessity. It is pointed

out by one correspondent, however, that a hog fattening on grain is satisfied with very little exercise. Another correspondent protests against the close pen as cruelty to animals, and deserving of the attention of the authorities. A number lay stress upon the benefits of clean, dry bedding or floors for hogs, one correspondent asserting that foul pens give the pork a bad flavor. Judging by the preference expressed by packers and raisers (some of whom are quoted below), the reign of the fat hog is ended. A leading packer recommends for the market a hog weighing 160 or 180 lb., at six or eight months, and much of the feeding of the present day appears to be in that direction. This calls for a combination of pasturing and pen feeding, and some of the plans appear to be along the line of the best success.

Henry Davies, Mersea, Essex : It is always poor policy to shut up pigs that you want to grow into bone and size. Feed first slop-feed in pasture, then shut up in pens and give boiled feed.

Samuel Maccoll, Dunwich, Elgin : I am in favor of feeding in the pasture lot. Better pork is produced in this way as the muscles are better developed, making a larger percentage of lean meat in a hog fed in this way than in one of the same breed and weight when fed confined in a pen.

John A. Hankinson, Malahide, Elgin : Hogs should be fed in open plots or fields when the weather is not too cold, but may be profitably confined in good dry pens for a month or two before slaughtering and fed all the corn they will eat if fed regularly. For family use we keep our hogs clean, give plenty of exercise and mixed wholesome food.

W. G. Sanders, St. Thomas, Elgin : I let my pigs run in a small lot when fattening for market, because I think it makes the pork of a better quality. They have more lean meat and muscle than those pigs which are shut up in pens. My experience of hogs shut up in a pen and given no exercise is that their pork is mere blubber.

David Smith, Brant, Bruce : Our hogs are allowed to run from the time the warm weather sets in till the fall, or as soon as we find the stubble cleaned up. They are then shut up and fed until killed. To have good pork either for the market or for family use the feed must be good. I know of nothing better than pease, boiled and fed dry for the last two or three weeks.

John Booth, Normanby, Grey : Pigs fed in the pasture field with a good clean pen to lie in make the best mixed pork. Those fed in a close pen without exercise make soft, oily lard. The feeding of charcoal and sulphur twice a week helps the quality of the meat.

John Glaspell, Tiny, Simcoe : I would certainly favor feeding in the pasture, as I consider this mode produces the best pork for the market or for family use. It will be firmer, better streaked, and will not shrink in cooking.

James A. Glen, Westminster, Middlesex : I prefer to have them at large when growing, and pen them when fattening for the market. For family pork I prefer pigs to run in the orchard or clover pasture and fed on ground grain or soaked pease, as the meat will be more solid and also more mixed.

James Malcolm, Zorra E., Oxford : I called upon a farmer who has given a thorough test to the two modes of raising hogs—penning and running at large. This season one drove of spring pigs ran at large, and another drove of the same age were shut in the pen. Both litters were fed in the same way, but the one shut in the pen is now about one third larger than those running in pasture. Feed pigs with pease or corn for the choicest pork.

Thomas Shaw, Experimental Farm, Guelph : I would allow pigs to run in the pasture lot until the finishing period, when I would house them. Feeding when the pigs are allowed to pasture produces the best quality of pork for any purpose, owing to the proper intermixture of fat and lean.

F. W. Fearman, Hamilton : We are of opinion that close pen feeding produces a grossly fat hog, and free running tends to make a hog poor and thin. We would suggest pen feeding, with a free run of a few hours every day. For market use we would suggest that which would produce a 160 or 180 lb. hog in from six to eight months.

Dugald Graham, Toronto : Feed in the open field until within twenty days of killing time, when they should be put in a pen—say ten hogs in a pen and the feeding trough so made that each hog will have its own trough. Quiet feeding is a necessity, Clover and pease are by far the best feed ; then follow in order of merit, corn, coarse grains and slops.

Wm. Davies & Co., Toronto : We recommend that while pigs are at large in the pasture the ration should be gradually improved in quality. As to the best pork, we think that hogs fed in a pen under proper conditions will make as good an article of bacon as can be desired.

J. W. Adams, Scugog, Ontario : The finest and healthiest pork is produced where pigs are fed largely upon clover and vegetables, out of doors when the weather is warm and in well ventilated pens when shut up to finish.

James McNeil, Bedford, Frontenac : We generally let the pigs run in a pasture all summer where they can get grass and clover, as we think clover is as good as grain for about three months of the year, and it makes the sweetest pork.

Dennis Howkins, Eldon, Victoria : When pigs are growing I like to give them their liberty so as to keep them straight on their legs, but when fattening for market I believe in keeping them shut up. Pease make the solidest and nicest pork.

R R. Booth, Himsworth, Parry Sound : Hogs should be at large and have plenty of clover and shelter from sun and rain, bran and shorts three times a day, plenty of good water and a place to burrow in. We must have pease, as we cannot grow corn.

GREEN-FEEDING FOR HOGS.—Another topic of enquiry referred to the position occupied by green feed as compared with grain and roots, and also as to the treatment of the latter foods before being given to the swine. Although a unanimous assent is given to the absolute need of clover or other pasturage for the successful raising of hogs, the opinions of correspondents regarding the best grains and their proper preparation are as varied as the penmanship of the writers. One or two correspondents suggest vetches or rape as a substitute for clover. It would seem as if from three to five acres (according to the amount of grain or other food supplemented) are regarded as necessary in order to successfully pasture twenty-five hogs. Several correspondents advocate the "ringing" of animals before allowing them the run of the pasture. As to the treatment of grain or roots, there is nothing like uniformity of recommendation. Pease, oats and barley are popular, but there is a wide difference of opinion as to whether these should be fed whole or ground; and equal variance is displayed in the matter of feeding the grain or meal dry or moistened. Pease given in swill or in water appears to be more popular than any of the soaked foods. Chopped stuff and mill feed seem to be in favor with some when mixed with whey or skimmed milk. Potatoes, mangels and turnips, are recommended by the majority, but whether they should be fed raw or boiled is still a moot point with the farmers of the province. Some say that there is no benefit at all from the cooking, others claim that the food is improved to so great an extent that it is a necessity to the highest feeding, while a third set acknowledge the advantages of steaming or boiling, but state that the time and labor demanded are too much for the average farmer to bestow. One correspondent objects to the sugar beet as inducing diabetes in the hog, another declares that green pease and corn have a weakening effect, and yet another asserts that "clover is so full of insects that it is not good for the hogs." However, the greater number of the reports are hopeful, and there can be read in them evidences of a revived interest in the raising of what one correspondent says is the best paying stock he has. Taken with the quotations already given on the feeding of young hogs, the following will give a very full idea of the various methods of swine feeding practised by the more intelligent breeders of this province:

Daniel Stuart, Tilbury W., Essex: We keep young pigs on pasture during summer months, and give them some water and grain. For early fall feed we give them sugar beets, carrots and mangel-wurzels. Three acres of clover I found enough for 25 hogs, with other feed. We aim to have them in just moderate condition in the pasture, and take them off to fatten when the roots and corn and other grain come in. We get the best results from ground grain fed dry, as it takes longer to eat, while if fed wet it will be bolted. I tried cooking the food, but gave it up as it didn't pay.

F. H. McRitchie, Zone, Kent: I have fed a good many turnips both boiled and raw, and find them profitable. It pays to have some portable fence for the hog pasture, so that they will not run over all of it at the same time, and if you have roots growing in the next field you can thin them out to better advantage by feeding all the spare ones to your hogs, and the hog pasture will be a good place for a crop the following year. With a portable fence three acres of clover will be sufficient for 25 hogs. I also feed oatmeal, shorts and skimmed milk. I prefer ground grain scalded.

T. H. Coatsworth, Harwich, Kent: I have never tried any kind of green feed except clover, as I believe that is the cheapest way to raise them. They will grow well on clover and a little slop, bran or shorts and swill. About the middle of September pen up close and feed upon soaked pease and corn, killing about the latter part of December. Spring pigs will then weigh from 200 to 250 lb. each, and that is the kind of pork that sells best in the market. I should say that three acres of clover would suffice for 25 hogs. I have never ground any grain for fattening pigs. I always soak pease, but feed corn in ear dry.

John A. Hankinson, Malahide, Elgin: For winter feed I generally have some clover hay cut in the middle of June, and some mangels or beets. After six months give whole corn, or, if ground, feed dry and give milk or water alone.

Samuel Maccoll, Dunwich, Elgin: I believe clover and green pease produce better results for early sales which as a rule give the best figure. For additional foods, I get the best results from feeding ground grain dampened, not very wet, and give the water supply after eating.

J. S. Wyckoff, Woodhouse, Norfolk: I think clover is the best green food for pigs. Ten good-size hogs can be kept on one acre. Additional feed of whole dry corn gives good results. My experience of feeding grain has been in favor of whole and dry, but if ground it should be either wet or soaked, but not cooked.

N. H. Wickett, Seneca, Haldimand: The only green fodder I have had much experience with is vetches, which I cut and feed to the hogs in the yard. This, with swill and shorts, makes good pork. Pease are soaked in the swill barrels with good results.

W. J. Winter, Holland, Grey: White clover and grass will keep the pigs healthy, but will not make pork with the ordinary breeds of pigs. Dry pease scattered among the grass and meal with milk will give good results. I have found pease and oats mixed in equal bulk and fed on the clean grass or on the hard snow in winter to be just as satisfactory as meal. I have always fed turnips liberally in winter in addition to the grain ration to the breeding stock.

W. Sutherland, sr., Gwillimbury, W., Simcoe: Pigs do very well on clover if one has it, but clover, is a crop one is not sure of. I place chopped pease in the swill, and feed other grains dry, either whole or ground. Pease and wheat half and half is the best food we have found for producing fat quickly.

Wm. Gerrie, Oxford, N. Oxford: I have found hogs do best on clover and whey mixed with shorts or slop. Skimmed milk would of course be better, but our milk goes to the factory. If nothing is given but water, 25 hogs ought to have at least five acres of clover, but with a little chopped stuff in whey slop one half of that would be sufficient. I find that when roots (mangel-wurzels, potatoes, etc.,) and pumpkins are cooked and mixed with some oat or barley slop that good pork can be produced, but when the labor is taken into account, and when coarse grains are so low in price, this is not profitable. I would prefer all grain to be ground and scalded, but corn may be fed profitably whole and dry. When I feed pease whole I scald and soak 24 hours, and afterwards mix dry with bran and shorts before feeding.

Thomas Shaw, Guelph, Wellington: I would allow the young pigs to run on the clover pasture as soon as weaned, and would feed them there. During the finishing period I would confine them in a pen. Three or four acres of clover should pasture 25 hogs. During the latter part of the pasturing season it might be necessary to give them additional green food, as green peas, etc. Skimmed milk is best when the pigs are young; then add middlings, and later small grains of various kinds, the refuse of the winnowing mills, etc.; ground grain cooked or steamed has given the best results.

F. W. Fearman, Hamilton: We believe that straight grain feeding is unprofitable. Grain should be mixed with boiled potatoes or potatoes and boiled shorts mixed, warm food being the most profitable.

Wm. Davies & Co., Toronto: As long as pigs continue to thrive on green food of any kind we believe it to be economical and healthy, but we wish to protest against the statement that they can be fattened on green food, for when the fattening proper commences we recommend meal only. We believe in feeding grain ground and dry, and letting the animals have access to water at all times. Nevertheless, if a farmer has facilities for boiling the meal (few have) and the time to spare, the best results will be obtained.

Dugald Graham, Toronto: Clover and pease, or clover and corn, or clover with any kind of coarse grain and slops are the most economical kinds of feed, ground grain wet, not cooked, giving far better results than can be obtained by feeding whole and dry grain.

J. W. Adams, Scugog, Ontario: I usually keep about 30 pigs (I have 62 at present, all pure bred Berkshires), and I consider them the best paying stock on the farm. I wean my pigs on a little meal, milk, etc., but let them run in a grove alongside the lake shore, where I keep about five acres of clover for the whole herd to run in. They get nothing after they are weaned but what they pick up themselves.

Luther Platt, Athol, Prince Edward: The cheapest pork I can produce results from the following plan: A litter dropped in September or October is kept in the pen on milk and soft feed until the spring, and turned on to a good pasture plot until harvest time, after which they are confined to the pen and fed grain either ground or cooked until as fat as required. By the time they are a year old they should dress 350 or 400 lb., and at a time when pork for the local trade is invariably at the highest price. I prefer ground grain and generally feed it dry. When they tire of it I feed some whole and occasionally some cooked—any way to keep their digestive organs in tone and their appetites keen.

Richard Bowden, Cumberland, Russell: Hogs should have good clover two months, followed by green pease, as they require a change; at the same time skimmed milk and a little barley meal should be given. I find this the quicker method of growing hogs up to size before shutting up to finish for market.

Quality of Pork in Demand.—The quality of pork in demand varies according to the market. For lumber camps and Indian supplies the pork cannot be too fat. For family markets the balance of opinion is in favor of pork weighing from 120 to 180 lb. in the carcass, not too fat, but well streaked and "meaty." The Montreal market appears to require a larger hog than the Toronto market. A few correspondents express their belief in 120 lb. as most profitable weight for a carcass; those aiming to supply shantymen say that about 350 lb. is right: but the most popular weight for family use is below 200 lb. A leading packer says fat pork is not wanted, as the demand is for lean, and he advises farmers to grow hogs that will reach 175 lb. at six months. The demand is increasing for young hogs of that weight. Some half-bred improved Yorkshires received the past summer exceeded that weight and were very fine. What is wanted is less head, more ham and sides, fine bone and skin, and meat well mixed with fat and lean. The age for market of course varies with the weight. Those who believe in the smaller weight say four or five months old; those who prefer about 200 lb. say this weight can be attained with skilful feeding in eight or nine months, and those who feed heavier variously estimate thirteen to eighteen months as the time necessary for bringing out a 350 lb. carcass. Early spring pigs, it is held, will be more in request in the future, and these can be made with care to put on a pound of flesh a day.

W. G. Sanders, Yarmouth, Elgin: The quality of pork most in demand here is a pig that has good hams and a straight back, deep sides, but not too much blubber. The weight of pigs in demand is about 175 lb. to 225 lb. live weight. I have had pigs gain 1½ lb. per day from birth by my method of feeding. To have good results pigs must never be stunted from birth.

W. S. Howell, Sombra, Lambton: The buyers like pork of moderate thickness with a fair show of the lean well scattered, rather than all a "gob" of fat. Yet they do not like thin pork. As to weight, from 125 to 200 lb. dressed, meets with most favor, and commands a slightly better price than the heavier carcasses. Old brood sows and stags bring the lowest price of all. Spring pigs can be grown large enough for fall killing, but as usually fed hereabouts it takes a full year; early fall pigs make fine pork in April if fed well.

Robert Douglas, Turnberry, Huron: Buyers do not seem to make much difference between fat and lean pork, although doubtless they would prefer it mixed. They prefer the hogs to be about 200 lb. live weight, while formerly they wanted 300 lb. and upwards. At eight months a hog should weigh about 200 lb. live weight.

Green Bros., Zorra, E. Oxford: The improved large white Yorkshires are preferred by nearly all the packers on account of the large proportion of lean meat they produce, and the lengthy and deep sides which are the most profitable portion of the pig.

James Laidlaw, jr., Guelph, Wellington: Buyers prefer a long, deep hog, not too heavy in the shoulder, as they claim it takes best with their retail customers. The animal should be about 200 lb. alive or 160 dressed, and should reach this in about seven months.

J. E. Brethour, Burford, Brant: Buyers want plenty of deep tissue, and a long, deep pig must meet that requirement. The animal should weigh dressed 180 or 200 lb. Pigs ought to attain that weight at seven to eight months.

Armsby & Chapman, Springfield, Peel: A long, lean, fleshy side is in most demand. Buyers do not want very heavy hogs; about 160 to 200 lb. live weight suits the English trade. At five to seven months hogs will meet this demand.

Dugald Graham, Toronto: A fair distribution of fat and lean. Heavy fat is not wanted, but medium weight is in unlimited demand. The average weight should be 140 to 200 lb. dressed, or 160 to 240 lb. live weight, and this weight should be attained at not over six months.

Wm. Davies & Co., Toronto: Well fatted hogs carrying a large proportion of lean are in most favor. The weight of carcass in greatest demand is from 110 to 150 lb., or live weight 140 to 200 lb., and for the latter we pay the highest price. We believe the maximum weight can be obtained by good feeders at eight months of age.

John Nixon, King, York: The Berkshire hog makes best pork as regards mixed meat. Pigs weighing from 100 to 125 lb. have sold best for the last five or six years, and they can reach this weight when about five or six months old.

Luther Platt, Athol, Prince Edward: For local consumption pork streaked with lean is preferred, but hogs for the general market can hardly be got too fat. From 150 to 200 lb. dressed is the popular weight for local use, while for the general market the weight may be doubled. These weights may be secured in about six or eight months.

W. H. McNish, Elizabethtown, Leeds and Grenville: A hog weighing 150 lb. dressed, with meat well mixed, commands the readiest sale and highest price. This weight can easily be reached at six months.

Archibald Kennedy, Osgoode, Carleton: For city use, pork with lean distributed through it is preferred. Half a cent a pound more is paid for a 200 lb carcass than for the heavy weights. A hog should be ready for the market at six or seven months, according to feeding.

John Fell, Somerville, Victoria: Nicely mixed meat is in best demand, especially by local butchers, who prefer a hog weighing about 150 lb. For lumber or contractors' camps pork cannot be too heavy.

Lewis Marsh, Huntingdon, Hastings: Large sized animals from 275 to 350 lb. in the carcass are preferred by buyers here, who ship to the Montreal market. I think that very early spring pigs will be fatted more in future. This class should be made to go a pound a day till time of killing in fall.

Samuel Wilson, Himsworth, Parry Sound. Up in this region the heaviest pork sells the best, say from 300 to 400 lb., for as it is chiefly used by lumbermen the heavier and fatter the better. The reason lumbermen get Chicago pork is that they cannot procure Canadian pork heavy enough to suit them. Heavy mess pork is not put up in Canada—at least not heavy enough for them. It would require hogs two years old to be heavy enough for lumbermen's pork. For family use eight months is old enough, when a hog should weigh about 200 lb.

The Kind and Method of Feeding.—The testimony is almost unanimous to the effect that, if the appearance of the pork suits the market on which it is placed, buyers very seldom ask what the animal has been fed upon. The correspondents say, however, that barley makes richer and sweeter pork than corn, that corn and pease make the firmest and least oily fat, but the majority prefer pease as the feed which produces the best quality of meat. Several correspondents also claim that there is the least shrinkage in pork fed on pease. An experienced feeder says that during the summer and early fall he gives cracked rye or beans or shorts three times a day, and when the cold weather comes tops off with corn. Another very successful feeder says the right plan is to begin with corn and pease and finish off with barley meal.

W. H. Taylor, Raleigh, Kent: Pen-fed hogs are preferred for the home market. A large number of hogs (field-fed) are exported every year to the Buffalo market. Corn makes much solider, sweeter and whiter bacon, and it always commands a higher price in the market.

Archibald McColl, Aldborough, Elgin: Buyers do not make any difference in the price, but they prefer pea-fed pork, as they say it shrinks less in shipping.

George D. McCall, Charlotteville, Norfolk: All hogs should be ready for the market from June to January. Hogs wintered should be fat in June, and spring pigs should be fat in December.

D. Schooley, Bertie, Welland: The buyers I have dealt with prefer pen-fed hogs fed on solid food, as corn and barley, which makes more solid pork. It is not so soft or oily as when fed on acorns or other soft food.

Wm. Mitchell, Artemesia, Grey: In this section buyers prefer hogs fed on pease, because it makes the firmest pork.

James A. Glen, Westminster, Middlesex: Shippers of live hogs prefer field-fed as they stand the journey better.

J. E. Brethour, Burford, Brant: Buyers prefer pigs taken from the field in preference to pen-fed, as they stand shipping better. Hogs fed upon mixed feed carry more lean tissue than when fed upon all corn or pease.

Wm. Mountain, Downie, Perth: Pen-fed hogs are preferred by buyers. Pease and corn are also preferred on account of these grains making firmer pork.

J. H. Campbell, Wellesley, Waterloo: Buyers here prefer pen-feeding. Pork fed on corn or pease has less shrinkage in weight whether shipped living or dead.

F. W. Fearman, Hamilton: Field-fed pork is apt to be poor and rangy, and as such is avoided by careful buyers. Commercially speaking, buyers make no difference in the matter of feed, except in distillery, beechnut or straight whey fed, which are not merchantable.

Wm. Davies & Co., Toronto: Buyers have a decided preference for hogs fed on pease or barley, because they produce firm fat with but little oil in it, and plenty of muscle or lean flesh.

Dugald Graham, Toronto: Young hogs grow best in the clover field, but when feeding time comes they should be placed into pens. Pea-fatted pork commands a much higher price, because it is firmer, sweeter and better flavored; and especially so if clover and pease are mixed. Dry clover should be cut before feeding. Corn-fed pork is soft as compared with pea-fed.

Louis P. Hubbs, Hillier, Prince Edward: My customers tell me that they do not want any pumpkin or swill fed hogs. Corn fed animals are preferred.

Paul Stein, Denbigh, Lennox and Addington: Pen-fed pigs are preferred by buyers. A preference is also shown for hogs fattened on pease.

Joseph Kyle, Hawkesbury E., Prescott: Buyers mostly prefer pen-fed hogs. They prefer hogs fed on corn or pease, as they say the pork is firmer.

Hogs Compared with other Farm Stock.—A great diversity of opinion marks the answers to a question as to the profitableness of pigs compared with other farm animals. One correspondent thinks 75 per cent. of pork is grown at a loss to the farmer. Another would rather contract to supply pork at a certain price than beef, and says he would get twice as much profit from pork as from beef. About 60 per cent. of the replies say that pigs are more profitable than any other farm stock. Of the other 40 per cent., the division is about equal as to whether sheep or cows are the more profitable animals. The proper reply to the question seems to be that at some times pigs return more than sheep or cows, but pigs can be multiplied so rapidly that a high market cannot be counted upon for many months ahead. In districts where there is bush pasture, cattle are undoubtedly more profitable than pigs, and on poor land sheep are the more profitable. Pigs compare best with other stock when all have to be fed on the farm, and one great point in favor of them is that the numbers can be increased or decreased largely in a very short time.

E. B. Tole, Harwich, Kent: The feeding of hogs depends on the quality of your farm. It pays well on light land as you can feed your coarse grain to advantage with a quick return, and the manure from hogs is of the best quality. I think a pound of pork can be made with less grain than a pound of either beef or mutton can.

S. McDonald, Orford, Kent: My opinion is that hogs are much more profitable than cattle, but I cannot say anything as between them and sheep. Hogs can be got ready for market earlier than cattle, and there is a readier demand for them all the year round. When fed on milk, bran and shorts and house slops, with a run of the clover patch and a month or two on corn to finish up with, pork can be produced at a goodly profit as a rule.

W. G. Sanders, Yarmouth, Elgin: If a pig is bred and fed right and properly housed, there is no animal on the farm that will pay better for the money that is invested.

John A. Hankinson, Malahide, Elgin: Here, where good farmers raise 100 bushels of ears of corn per acre, we much prefer the hogs to make money and quick returns, which industry many unite with their dairy cows. Breeding steers are fast giving way for horses and hogs.

James Morrison, Walsingham, Norfolk: We have a very good market for hogs all the year round. I think with the cheap price of coarse grain it pays better to grow pork than to raise cattle or sheep.

John Kernighan, Colborne, Huron: I think that hogs pay fully as well as cattle, and they have an advantage over cattle in meeting with a more ready sale, for you can take a fat hog to market and sell it at any time, while you must wait for a buyer to come for your cattle.

James Shearer, Egremont, Grey: There is no profit to farmers in feeding grain except for their own use, as hogs require more or less of a grain ration all their lives, while cattle and sheep can be fattened on grass.

M. and W. Schell, Oxford E., Oxford: In direct profits, pigs have paid best for some years past. Of course cattle must be kept to utilise straw and other course feeds.

J. E. Brethour, Burford, Brant: I consider the profits from feeding hogs much greater than with either cattle or sheep when properly fed and cared for; but this is the exception, as it is generally thought that anything is good enough for a hog. This is a great mistake, as nothing will repay careful attention and liberal feeding better than the hog.

Wm. White, Hibbert, Perth: I think a farmer can make more money raising and feeding hogs than cattle, for he gets his returns quicker and has not so much money invested, and he can go out of business in a few months if it does not pay.

Alexander McLaren, Caledon, Peel: Feeding hogs has turned me in some $300 this year, and I regard this as the most profitable feeding I have made.

W. B. Terry, Gwillimbury N., York: My experience is very unfavorable in the matter of breeding and feeding hogs. I consider the raising of cattle and sheep far more profitable, but most of farmers go on feeding hogs without knowing the quantity of grain fed in relation to the amount of pork produced.

Luther Platt, Athol, Prince Edward: I believe the margin of profit is greater in the case of either cattle or sheep than it is in hogs, and I am quite persuaded that unless some forethought and system is used in the feeding of hogs the pork will cost the producer the full price received.

W. H. McNish, Elizabethtown, Leeds and Grenville: We think that where hogs are kept in connection with the dairy there is double the profit in them that there is in cattle.

John R. Hughes, Plantagenet N., Prescott: Hogs are more profitable than either cattle or sheep. A hog that will weigh 300 lb. at twelve months is worth more than a steer at two years on about half the feed.

A. Hagar, Plantagenet, Prescott: March pigs, if properly cared for and turned off at eight or nine months, will pay much better than breeding and feeding cattle, and give a much quicker return. With sheep the difference would not be so great.

Thomas Telford, Ennismore, Peterborough: A large portion of Ontario is fast decreasing in wheat growing, and I believe pork raising will be a good substitute both for profit and improving the soil.

Middlemen.—Bitter complaints are made by the farmers concerning the absence of competition among buyers, who cut down prices as soon as the hog-killing season arrives, and of the lack of any means of bringing large buyers face to face with the producers. The feasibility of combination amongst the farmers to deal direct with large buyers and thus save the middlemen's profits is alluded to by several correspondents. The suggestion is made that packers should establish regular agencies in different parts of the country, where full market prices will always be paid for a lot of even, well-fattened hogs. Another suggestion is that a system of local stock yards should be established, which would be attended by responsible commission men. Yet another suggestion is that some large establishment at Toronto or elsewhere should announce itself as ready at any time to purchase a car load of hogs coming up to a certain standard of weight, age and quality. Or, that in the principal hog-killing time, namely, the end of November or the beginning of December, the large buyers should send their agents out into the country to buy either on foot or slaughtered. An Elgin county correspondent says: "Farmers should have organizations so as to facilitate the marketing of their pork as well as other products. By dealing directly with the large dealers regular market rates would be obtained. As it is at present with us, agents go around among the farmers and buy from one man for $5 a hundred weight and from his neighbor for $4.50, where there is no perceptible difference in the quality."

Breeding and Feeding for a Constant Market.—"March pigs for the Christmas market and wintered shotes for summer and fall," is the concise way in which one breeder says he would supply the market. Nearly all the replies say that the sows should have two litters a year. There is much divergence of opinion, though, as to the

time at which the litters should come in. Some say that the farmer should have hogs ripening all the year round, and that it does not pay to fatten all the year round; others say, and with reason, that farmers cannot be bothered with feeding pigs during the busy season, therefore that there should be two main crops of hogs—one coming into market about December and the other in the spring, having been fed mainly on roots. A number of correspondents are certain that it does not pay to winter anything but the breeding stock. As to course of feeding, it is suggested that farmers should raise only the choicest of their calves and would find more profit in feeding their milk to young pigs. An English feeder gives the information that a bushel of dun pease is worth two bushels of white pease for feeding pork, and he maintains that two-rowed barley is better than six-rowed for the same purpose. To make pigs pay better than cattle or sheep in this province they should be wintered on mangels or steamed carrots and fattened early on clover, roots and boiled grain. Pens should be warm, yet well ventilated and cleanly, if good results are expected. Ontario farmers should not attempt to raise hogs alone; there is more profit in raising all kinds of farm stock together. One correspondent thus summarises his system of feeding: Have the pigs born at the end of March; when weaned let them run in pasture; feed skim milk, bran and shorts; then put them on clover and they will be ready for fattening by mid-October; market at end of November or middle of December.

John Coulter, Mersea, Essex: Keep old sows (or from one to three years) and feed your pigs all they can eat from their birth. You can raise two litters each year and have them ready for the market in six months.

E. B. Tole, Harwich, Kent: I would breed from pure bred hogs of medium size, and keep them growing and thrifty all the time, so that they would be ready for the market at any time. I think the old way of feeding hogs until they are two or three years old in order to grow them a large size is played out.

John H. Hankinson, Malahide, Elgin: The breeding and feeding in this county are two much of a mixed hap-hazard character. Nearly every breed is raised whether it suits the market or not. The quality of hogs should be fully outlined by our buyers, and then we could easily breed to suit them.

James Morrison, Walsingham N., Norfolk: I would have my sows have two litters a year, one in the spring and the other in the fall, and the pigs I wintered would be ready for the early market to sell alive, while the spring pigs will make 200 lb. dressed by Christmas.

Wm. Gerrie, Oxford N., Oxford: We generally keep over winter as many young pigs as is profitable and convenient, and turn them out to pasture in the summer, when with very little expense we have them ready for the buyers about the first of July; and at the same time we have a few spring pigs coming on for all and winter feeding, both for buyers and family use.

J. E. Brethour, Burford, Brant: By breeding twice a year you can have a supply of hogs for the butcher at all seasons of the year. But to do this warm pens must be provided for winter feeding. By boiling roots and mixing with ground grain, they can be fed nearly as cheaply in the winter as in the summer.

Richard Blain, Dumfries N., Waterloo: Proper pens and a good breed of pigs are requisite at the start. I do not see why the average farmer in Ontario should not feed from eight to ten pigs each year, which ought to bring him in $100 to $120 without much trouble and leave him some valuable manure for his root crops.

Dugald Graham, Toronto: Plenty of clover for pasture and feeding is needed, together with proper facilities for feeding and keeping warm in winter. The want of good pens has been the greatest hindrance in the past. When farmers learn how to secure two litters each year and to raise and fatten them on clover and pease or corn and coarse grains, with what slops can be got, and fed in properly constructed pens, then they will be in a position to supply the market and make more money than they can out of any other farm product.

Jonathan Cross, Caledonia, Prescott: It would require a larger stock of hogs than we can conveniently carry to supply the market at all times with good pork. As we have also to feed for butter and cheese, we cannot fatten more than we do.

Dennis Howkins, Eldon, Victoria: I would advise every farmer to keep two or more sows breeding continually, so that he may have young pigs for sale at all times of the year. Five litters can be had from each sow in two years.

R. R. Booth, Himsworth, Parry Sound: Raise plenty of coarse grain, keep a good breed of hogs and feed all coarse grain to them in place of marketing it, and Canada will soon be able to raise its own pork.

Can the Home Market be Supplied?—During the last eight years 60,000,000 lb. of hogs, valued at $3,160,000, have been slaughtered in bond in Canada for exportation. What change is necessary in order to enable the Ontario farmer to supply this pork? A few of the correspondents say that in their opinion greater attention paid to breeding, feeding and marketing the hogs will enable the Ontario farmer to supply

the factories. One blames the Agricultural Societies for letting down the pig prizes; twenty years ago, he says, three times as many pigs were exhibited as are shown now. But the general opinion is that the Ontario hog raiser can never compete on equal terms against the cheap pig feed of the western states. We cannot slaughter for exportation, they say, because of the dearness of our food supply compared with that on which the western hogs are fattened. At present there is a limit to the market. Any increase in the supply would knock down prices to an unremunerative figure, and we cannot raise hogs any cheaper unless we get food cheaper. Therefore, says one correspondent, "Let us have free trade in pigs and pig feed." Another says, "Give us your good and certain market with staple prices and the hogs will be forthcoming;" while still another says, "There is no reason apparent to me why hogs should be imported, but the ignorance of the farmers of the wants of those who purchase." But if pease can produce a more suitable quality of pork for the market than corn, and if this along with green feed, roots, etc., can be fed as cheaply as corn, Ontario farmers should experience no difficulty in supplying the demand of packers for both the home and the English markets.

Joseph Ripley, Camden, Kent: The reason in my opinion why more hogs are not raised in Ontario is because farmers have not learned the cheapness and benefit of green fodders, such as green corn and clover.

W. H. Taylor, Raleigh, Kent: We want more remunerative prices and a steady market, not subject to the bulls and bears of Chicago. Many times the farmers after slaughtering for the Chatham market have found on arriving there a drop of 50 to 60 cents per 100 lb., because "Don't you know it is down in Chicago this morning?" No wonder if we sometimes get disgusted with the fat-hog market.

W. G. Sanders, Yarmouth, Elgin: I think that the Ontario farmer can, by providing proper buildings for his pigs, raise all the pork that is required at all seasons of the year. The trouble is that we farmers are not in correspondence with the packers and we do not know when there is a market. Our market now is for a few months in the summer, live weight, and a small demand for our slaughtered hogs in the winter by local packers for home consumption. There will be no trouble in breeding and fattening in Ontario all the pigs that are needed to supply the demand if there were free communication between farmers and packers. I know at the present time that nine-tenths of the farmers of this county are afraid to breed too many pigs for fear that they will glut the market. Now packers send a responsible agent, or correspond with us and tell what you want and how much you want and I can guarantee that we can produce all the pork that is needed without sending to the United States for it. We want the money in Ontario.

G. Skinner, Brant, Bruce: Feed all the coarse grain on the farm. But many of us cannot do that; we are half of us bankrupt, and as soon as we thresh a little grain we have to rush to the market with it. In 1883 my pork sold for $249, leaving a profit on the grain fed of $117.75, and although my profit has not reached that percentage since it has always been very handsome. I am always on good terms with my pigs, and the man who thinks anything is good enough for a pig should never own one. The hog, well treated, is a generous fellow.

W. F. Petrie, Egremont, Grey: Breed from nothing but robust, healthy stock, and give more attention to feeding and comfort of stock, when more roots can be used for winter feeding.

A. Gifford, St. Vincent, Grey: I do not think we can supply the demand with profit to the feeders. The bulk of those pigs slaughtered in bond are undoubtedly brought in during the late spring and summer season, when in the larger part of Canada no pigs are fattened; nor could they be profitably except at much higher prices than usually prevail.

David Allan, Egremont, Grey: Provide stone basements under the barn or stone pens for shelter. Have a litter come early and feed right along, with a second to follow in the summer, and selling the first early in the fall without any pen-feeding. The farmer has thus the most of his grain to feed the second litter. My neighbor realised last year $150 from one brood sow by the foregoing method.

W. J. Winter, Holland, Grey: I am of opinion that 75 per cent. of the pork produced in Canada is made at a loss, for not one farmer in a thousand knows what his hogs cost. I have kept careful accounts for many years and have made many careful calculations, and I do not think that Canada can compete with the American corn belt for pork, or make a profitable farm crop of it on a large scale.

Wm. R. Rombough, Normanby, Grey: We cannot expect to produce pork as cheaply as it can be done in the corn growing states, and the only remedy I can think of would be to not allow our railroads to discriminate against us by charging larger rates per mile for taking our pork to market. This making Chicago nearer the seaboard than London, when measured by the freight charge of the Grand Trunk Railway, is a hardship to producers, lessening the value of Canada land and increasing the value of Illinois land.

James Coutts, Vespra, Simcoe: We want a larger pig, one that will stand feeding. I think the improved Yorkshire will fill the bill.

George Aitkin, Dumfries S., Brant: Keep more breeding sows and feed intelligently, and with judgment. There is more money wasted feeding hogs than any other animal on the place, by feeding unbalanced concentrated foods.

Thomas A. Good, Brantford, Brant: I do not think we will ever be able to compete with the cheap corn and other grains of the western prairies, and Ontario farmers will be a long time supplying the demand; but if they were able, as soon as they got enough buyers would cut down prices to a mere nothing and reap all the profit themselves. They will write letter after letter to the papers about the profit of hog raising, and just as soon as plenty of dressed hogs come to market they either stop buying or cut the price down two or three cents a pound. At least that is what they did last year.

Alexander Gale, Pilkington, Wellington: Clearly Ontario farmers should keep more brood sows if this industry is profitable; the tendency is in that direction as far as my observation goes. The question arises, how long will it take to overdo the business?

Thomas Shaw, Agricultural College, Guelph: A larger number of pigs must be bred. Clover pasture must form a leading item of their food ration in summer, and roots, especially mangels, in winter.

John Ewing, Mulmur, Dufferin: In districts where wheat growing is made a specialty, farmers do not trouble much about hogs. Then, again, the majority of farmers have not properly constructed pens in which to put their hogs. Until they learn to know that hogs need warmth and shelter, as well as horses, hog raising will not become general.

F. W. Fearman, Hamilton: Canada should and can raise all the pork that is required here, but the admitting of barrel pork at half duty gives the American farmers so great an advantage that the Canadian farmer cannot compete with them. This is on the heavy meats used by the lumbermen and others.

John Snell's Sons, Chinguacousy, Peel: Two litters a year may be had from sows if the first come early in March and the second in September. Fall pigs should be not later than September to get a good start before cold weather commences. Two sets of sows might be kept, one to farrow in early spring and the other in early fall or late summer; the latter would come in to sell in the spring. Breed more pigs, and keep them going on well from birth to early maturity.

Thomas Poucher, Pickering, Ontario: We must breed more hogs and grow more corn. For the last few years pease has been a poor crop while corn has turned out well, and as growing grain does not pay we must turn our attention to raising hogs, cattle and sheep. The demand for meat and milk is increasing every day.

William Carveth, Cavan, Durham: Feeders should ascertain as near as possible the kind of pork required by exporters, and then make the change necessary to produce such meat.

James Parr, Cartwright, Durham: If raising pork was considered profitable no doubt sufficient to supply all demands might be produced in Canada; but with the advantages possessed by the western states in the growing of corn I think we can scarcely hope to compete with the Americans in the pork raising business.

George Lott, Richmond, Lennox: The removal of the duty on lean hogs, with more green feeding such as clover, etc., would effect a cheapening in the rearing and feeding.

John R. Hughes, Plantagenet, Prescott: Owing to the coldness of the climate we cannot compete with the states of Ohio and Illinois in raising pork or corn. Where corn is cheap, pork is found to be cheap too.

R. Serson, Fitzroy, Carleton: Produce a breed of pigs that come to maturity quickly and get them to market as early as possible, with as little expense as possible, and have them ready at 24 hours' notice.

Edward Butterworth, Laxton, Victoria: If farmers raised two litters a year there would be ample supply for local as well as export markets.

Markets for Hogs and Hog Products.—Pork packers and dealers state that there is a steady market for hogs and hog products throughout the year, but that there is a difficulty in getting supplies suited to the taste of consumers. The demand for fat pork has fallen off very greatly except for lumbermen's supplies, and as the duty on mess pork is only one-half of the rate of duty on bacon and hams the Canadian packers are unable to compete in prices with United States packers who deal exclusively in the cheap corn-made pork of the western prairies. The dry salted and sweet pickled meats which are called for in England, and also for the most part in Canada (including sugar-cured and smoked), must be firm fat mixed with an abundance of lean, and unless Ontario farmers can produce hogs yielding that quality of meat they will fail to keep their own market. Given a hog with small head, light shoulders, long and deep sides and heavy hind quarters, what the feeder needs to aim at is (1) how to feed for bone and muscle or lean meat; (2) how to feed for adding fat to the lean and finish 140 to 200 lb. live weight for the market at six to eight months, and (3) how to breed and feed for a constant market, and so supply hogs of uniform quality and keep up as nearly as may be an equilibrium of prices. To attain these objects the feeder must have experience and intelligence; but success means the distribution of an extra $2,000,000 a year among the farmers of the country, and possibly much more should our packers succeed in satisfying the English markets.

Ruby & Hilker, Port Elgin: Our trade is entirely local. For the past two years we have been unable to supply the demand, and will be unable to do so this season. There are fewer hogs raised here now than in previous years. Smoked sugar cured hams and breakfast bacon, made from well fatted spring pigs weighing 130 to 200 lb. in carcass, are the meats preferred by our customers. We obtain dressed hogs from farmers from 20th November to 1st February, but do not get enough small well fed hogs. We regard the Berkshire as the best and most profitable breed, but do not think it pays to winter hogs. Spring pigs command a higher price in the fall than pigs wintered over. We recommend pigs to have the run of the pasture lot in summer and fed on whey, milk, green corn and roots. When cool weather sets in, put them in a pen and feed well for a short time with cooked coarse grains, pease preferred.

H. Coleman, Paisley: There is a very fair demand, and it is likely to increase if the right class of meats, properly cured, are put before consumers. I prefer lengthy Berkshire hogs 120 to 140 lb. in weight, dressed properly, and with a large percentage of lean meat in them. My customers are mostly in favor of sugar cured and smoked meats. The bulk of hogs I buy by dressed weight and dress them myself. A number of the hogs we are obliged to buy do not make the class of meats consumers want. A great many of the male pigs are not castrated at the proper time, and I believe the sows should be splayed. If both of these were attended to at the proper period it would be in the interests of the feeder, the curer and the consumer. There are too many hogs shoulder stuck, and many leave the entrails in too long after the animal is hung up. They cannot be taken out too quickly after the hog is dead.

Marshall & Pateman, Woodstock: The demand is for carcasses of 150 to 200 lb., and sugar cured and dry salted meats are preferred. We buy dressed hogs in the market here, fed in the neighborhood. We recommend the Berkshire and the Suffolk breeds. They are good to kill at any time from 70 to 250 lb.

F. W. Fearman, Hamilton: We do not ship any to the British markets, but have done so to a limited extent. As long as the hog supply in Canada is limited, and consumers such good prices, we cannot compete with western hogs and packing. We have imported no live hogs from the United States for four or five years. Hogs weighing 160 to 250 lb. alive or 130 to 200 dressed, with well mixed fat and lean, are very choice. We obtain supplies from drovers in our own country, but not enough in the early summer months. The kind of curing most in favor with customers is sugar cured and smoked. I would advise farmers to breed the kind of hogs that will grow to 175 lb. at six months. The demand now is, and is increasing, for young hogs of that weight delivered alive. I have received half-bred improved Yorkshire hogs of that age and dressed weight this autumn, and they were very fine. We want less head, less shoulders, more ham and sides, fine bone and skin, and meat well mixed with fat and lean.

William Harris, Toronto: I have handled 29,743 live hogs during the past ten months, 1st January to 31st October, all for the home trade. What is required is a hog that will go in carcass 125 to 160 lb., well matured, firm fat, and a large percentage of lean. I buy live hogs in Toronto market and sell live and dressed. The demand is always greater than the supply, especially from January to August.

Dugald Graham, Toronto (of Harry Bland & Co., Montreal): Enough Canadian hogs cannot be got; hence we have to draw a portion of our supplies from Chicago. We draw our supplies mostly from western Ontario, but cannot get enough. The Chatham hogs are too heavy and too fat for our trade, and are sold cheaper than light hogs. There is no use in fattening over 200 lb. dressed; hogs at 160 to 240 lb. live weight pay the best; pork above 240 lb. costs more than can be got for it. To feed quick and sell as soon as the hog gets to the above weights, according to size, is a sure way to get a profit.

Wm. Davies & Co., Toronto: The English market is inexorable in its demands for the choicest quality, *i.e.*, firm fat and abundance of lean; the bulk of consumers in Canada also demand the same thing. For England the curing most in favor is dry salted, usually known as bacon; for Canada the preference is about equal for that and sweet pickled. We do not handle dressed hogs. We buy live hogs largely in Toronto market, and a goodly number from feeders and dealers direct; but we are not able to obtain one-quarter as many as we desire at the time when we most need them—say from 1st June to 1st of October. This is the time when they would leave the most profit for all concerned. We advise farmers to obtain long, strong, healthy sows in such numbers as are adapted to their farms and their ability to feed, and to breed them to an imported large Yorkshire boar, to give them the best care and attention (it is a heresy to suppose pigs do not require it), and to feed them regularly and liberally at the times named above—in other words, when most of their neighbors are getting ready.

American Methods of Hog-Feeding.—With a view to presenting some of the methods practised in the United States, where the economic feeding of first-class pork has been developed to a high point during the past ten or fifteen years, some of the leading breeders of that country were invited to present their views on the subject, and a comparison of their methods with those of successful Canadian breeders will be interesting:

W. A. Alexander, Scipioville, New York: For several years previous to 1874 or 1875 our stock intended for fattening in the fall was during the previous summer fed oat and corn meal mixed with water and milk, and as soon as potatoes were fit to dig we steamed them and mixed with meal, feeding two meals per day of this and one of corn. About this time we became convinced that the potato cooking did not pay, as grain had commenced to fall off in price and labor was high. Since then we have been in the habit of finishing them off on soft corn and barley meal. We mix in the morning sufficient meal and water for the noon feed, and at noon for the night feed, and as the weather is warm a slight fermentation takes place, which I think makes the food more digestible. I find that barley gives a smooth, evenly-finished hog, while corn gives the weight. For the past three or four years the demand for our registered stock has been so great that we have not fattened any for market, and consequently we have had to change our mode of feeding to some extent. We feed our breeding stock now largely with middlings, oat and corn meal. I think I have obtained the most growth from feeding equal parts of oats, corn, bran and white middlings, the oats and corn ground.

C. S. Button, Chittenango, New York: My experience with pigs for the last fifteen years has been different from most of those engaged in extensive swine feeding, as I have fattened very few, although I have raised and sold from 100 upwards each year at various ages between six weeks and one year. I have always given them my individual attention. I have found that a little watching of young pigs when unobserved by them will often suggest the reason that certain ones in the herd do not thrive and what they need to make them hearty. Milk is acknowledged by all to be a very natural food for young pigs. It is first furnished by the dam, but as the pigs grow the milk of the dam becomes insufficient and other food must be given, and as the stomach has not yet become strong some food that is easy to digest is preferable.

Cut a hole in the side of the pen and the pigs will soon find it. When they show that they are fit for the trough, place one with a flat bottom and with narrow side pieces about two inches high where they can find it handy, and put in a little new milk. After a few days put in some middlings, and then a little barley meal can also soon be added to their rations. When the time comes to wean them, confine them in the pen where they have been with their dam and remove the mother, at which time I find it good to give a little oil meal with their food, feeding about four or five times a day and giving only what they will eat up at each meal. It is a good plan to add a little salt each day to their food. I prefer to give a variety of food, and in time I add corn meal. I always remember that corn produces fat, and as the pigs need something to produce bone and muscle, shrunken wheat (ground), middlings and fine bran are all good for that purpose. I always give one feed of ground food a day. I like the animals to have a run on the grass, but when this cannot be done I cut grass and weeds or give oats, sowed corn and roots, and all are excellent. Beets, carrots or turnips are good in winter. I prefer beets, but when these are not available I feed sowed corn stalks or clover hay. I never have had any trouble from over-feeding, as I believe that the faster a hog can be made to grow the more profit there is in handling him, and unless a pig has fasted he will seldom eat too much. I try to keep his bed dry and his trough clean, believing this to be better than any medicine prepared by the druggist. I have never lost a litter of pigs by the dam's eating them, as I always watch and see that the mother is not costive for a few days before farrowing, believing that costiveness in the dam is the most common cause of viciousness. A half-pint of castor oil given in the food will not hurt a hog. I have not lost an animal by disease in a number of years.

F. D. Curtis, Charlton, New York: My method of rearing pigs for breeding is very simple. I winter my sows on bran, raw turnips and silage. They are fed silage morning and night, from four quarts to a peck, according to their size, with from two to four quarts of wheat bran mixed with it, per hog. These foods are mixed with water from meal to meal, so that they are quite sloppy in the middle of the day. Each hog is fed about a peck of raw flat turnips, according to size. I have fed them a little clover hay and think it is an excellent plan. I have but a few pigs come until the sows can get out to grass, when they are fed very little else but bran. Early in the season the sows are confined in a pen a few days before the pigs are born, and for a week or two afterwards, when they are turned into the pastures and fed wheat middlings. The young pigs are taught to go into an enclosure separate from the sows, where they are fed middlings mixed with water or milk, if there is any. The sows which have their pigs later in the season are generally left in small pastures, where there is a sty or shed in which the pigs are born. These sows generally have no food other than grass until the pigs are about a week old. If the sow has a large litter she is fed middlings sooner. I aim to keep all my hogs in pasture until cold weather. Those designed for fattening come to the pig-house from the pasture by a connecting lane, where they are fed a mixture of rye ground entire and wheat bran mixed with water, half and half, by weight. I have also fattened my hogs with this same food mixed, while hot, with cooked turnips. The best pork I ever made in flavor and containing the most lean meat was produced by feeding mostly boiled turnips with a small amount of the rye meal and bran ration. I endeavor to give my hogs a change of food quite often of some kind of raw vegetables or fruit. I keep salt in their pens always, and in the winter time give them the coal ashes to pick over. I have fattened grown hogs on sweet corn-stalks fed green, on which there were very few ears. I have also fattened them on raw sugar beets. I aim to produce as much muscle as possible, and keep both sows and pigs from the feverish condition which will be produced by an excess of carbonaceous foods, especially when they cannot get out upon the ground and enjoy the healthful luxury of feeding on grass in God's pure air.

Prof. W. A. Henry, Director of the Agricultural Experimental Station, Madison, Wisconsin: We have found grade Poland Chinas excellent animals for our experimental work. A sow should not farrow under twelve months of age; fifteen months would be better. If in a building, a sow should have a limited amount of bedding at that time, and fence boards should be placed around the walls six or eight inches from the floor, projecting out so as to keep the dam from killing the pigs by pinching them between her body and the wall. We now arrange to have our sows farrow in the open field, under some slight protection temporarily erected. We have been unable to get early pigs, and consequently they farrow in the summer time, when almost all are sure to live. The sow should be kept as long as possible, as old sows give better pigs and more milk. Until the time of weaning let the sow have an abundance of nourishing food, using skimmed milk if possible, and also some slop. Teach the young pigs to eat as soon as possible, giving them all they can take, as this relieves the mother and prepares them for weaning. Wean at ten weeks. Use a separate trough for the young ones to eat out of, or else have the trough from which the sow eats so low that the little pigs can get food from it. Build up good frames with shorts, pease, barley or skimmed milk, not using too much Indian corn. Give runs on a clover or pea field. Owing to the difficulty of raising early pigs, we carry the shotes over the winter, running them on clover the second summer; but if desirable they can be fattened by August. Hogs cannot be fed profitably in the pen for any great length of time, and it is well to keep them in pasture lots as much as possible. Give nitrogenous foods, such as shorts, pease and milk, using enough corn, however, to make the pork solid. If the market demands fat pork, feed more barley or corn. We have not experimented with roots, but are well pleased with clover and pease. Hogs cannot be fed on clover alone; with it they will make frame, but not fat. Five or six hogs, weighing 125 lb. each, will run on an acre of clover. Clover being nitrogenous, Indian corn is an excellent bye-feed, and so is ground barley. We generally feed whole grain. Corn, perhaps, would be better ground; but we have sometimes got the best results from feeding corn whole: this much depends on the condition of the animal. Our experience is against cooking feed for the fattening animals. By this is meant all the feed. Probably it will pay to give some cooked food for variety. The general buyer goes by weight only, but there is springing up a demand for smaller hogs not very fat. One local packing establishment pays one cent a lb. more than the market price for smaller lean hogs for fancy purposes. The hog has been very profitable with our farmers where care and intelligence have been exercised in the management.

In his annual report for 1888 Prof. Henry says: The writer's experience in hog feeding points plainly to one rule, which he believes can be taken as a standard for the present at least; that is, other things being equal, feed the hogs in such a way as to get them to eat the largest amount in a given time without waste. By following this general rule I think the best results will be attained. In conducting experiments with cooked and uncooked feed it was found that a hog would eat more uncooked feed than cooked,

and in these experiments we note that he ate more wet feed than dry feed. Since we desire him to eat the maximum quantity per day, it would seem that in some cases at least wet feed is superior to cooked feed on the one hand and dry feed on the other. Such seems to be the status of the important question of how to prepare feed for swine at the present time. How greatly we will modify our views when more experiments have been conducted and our knowledge of the subject has been enlarged it is impossible to say. . . . Swine growing is becoming more difficult because of insidious and wasting contagious diseases that come upon our herds at times. This loss, though severe in localities, is not as discouraging upon the whole as is that prevalent everywhere, due to what may be called the weakened constitution of swine. A large percentage of our pigs die at birth, and many more are lost before they reach a profitable age. The situation of affairs approximates that of a calamity to our agricultural interests, for under favorable conditions of production and sale no line of farming offers a fairer percentage of gain for the capital and time invested than swine raising. While far from wishing to cause any undue alarm, it is time we looked the matter squarely in the face and made a careful survey of the situation and an earnest effort to improve conditions. To get better markets and an increased consumption of pork we must have better meat, and to have better meat we must have better hogs which shall be properly fed, and to have them profitable we must have them born with better constitutions. We go back again to the subject of Indian corn, which is and will continue to be the great hog feed in America. In and of itself Indian corn lacks the muscle making and bone producing elements in such a measure that of itself it should not be wholly relied upon for feeding, breeding and growing animals. To such must be fed, it would seem, food that will strengthen the bones and nourish the muscles, and give the internal organs of the body that size which they should attain to serve their proper functions. Our trials, few in number and not warranting general conclusions, seem to point to the happy fact that no large quantity of feeds rich in ash and nitrogen, such as milk, shorts, bran, clover and pease, are needed to mix with corn to very materially increase the strength giving qualities of that grain. Only those farmers who are blind to results can fail to furnish the proper food materials to their swine. But we have not touched all sides of the subject yet. To win back the consumers we are constantly losing, people who object to greasy pork made from filthily fed animals, we must change our methods of feeding and kinds of feed. The present markets offer little or no extra price for hogs kept in cleanly quarters and supplied wholesome food of the kinds proper to produce the best pork. This condition must be changed. The farmer who gets a fine grade of butter may get three times as much for it as his slovenly neighbor does for the produce of his dairy, but if both have hogs to sell one market price covers both lots, regardless of the conditions under which they have been kept and the food supplied. This is wrong and can be changed. The time will come when hogs will be graded not altogether upon their live weight and Chicago prices, but by the breed, feed they have received and conditions under which they have been kept. If, by difference in feeding, we can put nearly four and one-half per cent. of blood into one lot of hogs, with only three and one-quarter per cent. in another, and make a difference of one-sixth in the length of the bones in these two lots in less than one hundred days, what a wide difference we can bring about by methods of feeding! If the bones of a corn-fed hog are less strong than they should be by one-sixth, and these hogs are used as breeding stock, what fatal changes may be produced in a few short generations! Our experiments may be said to represent extreme cases, but the figures may be divided seven times and yet be startling in their significance. The writer has been surprised to observe the satisfaction the hogs getting corn only seem to show with their diet; they grew rapidly and appear perfectly satisfied themselves and satisfactory to us as we look into the pens upon them. They are a fair illustration of the statement made by breeders that fat covers a multitude of defects. No one could tell by looking at these fat, corn-fed fellows that their internal organs are pinched in size and their bones lacking in strength. The casual breeder would be tempted to take just this sort of animals for breeders because they seem to lay on fat so rapidly.

English Opinion.—J. Wheeler Bennett, provision agent, of London, Eng., writes as follows to Messrs. Davies & Co., of Toronto: Canadians are held to be proverbial for keenness, but in the matter of hog raising they have terribly missed their mark. I have just returned from a trip to Denmark, and I only wish some of your intelligent farmers of Canada could have accompanied me. Denmark teaches most countries a wonderful lesson in pastoral pursuits. To see what these people have done in five years is astounding. First of all they dived deep into the mysteries of successful butter-making, grasped all the difficulties, which have been almost reduced to a science, till they have "licked all creation," and to-day they have absolutely no competitors in London or the northern markets of England. Their butter (finest Danish) in hundredweight whitewooded casks with white hoops, fetched this winter 144s. and 146s. per cwt. on our market. They have learnt how to feed the cattle, and their secret is all dry feed. Having conquered this butter difficulty, the Danes soon began to see that hog raising was four to five times more profitable than raising horned stock, and much more profitable than raising anything else. Their breed of hog was all wrong for bacon purposes for the London market—the most critical market in England. They imported at once the very finest strains of the improved large Yorkshire breed, the best bacon hog the world has ever produced. Having got the right class of hogs they began to learn how to feed them, and here again they scored a big success. You know a farmer may feed his hogs well and yet waste a quantity of food, besides creating an animal through ignorance or kindness of heart which has to be sold at the lowest market price. The Danes, by judicious feeding, raise a long, lean bacon hog, which commands the highest price and gives the greatest satisfaction. In Denmark hogs are sold by live weight in three classes, lean, medium and fat, at an average of two and three shillings per 112 lb. difference in value. Since the Danes have thoroughly understood that there is nothing in the world pays so well on a farm as breeding and feeding hogs for bacon purposes you have always buyers for bacon hogs it is a certainty they have advanced in this industry by leaps and bounds: 10,000 to 12,000 bales of Danish bacon arrive in London every week. The product is appreciated, and is seriously handicapping all Canadian and American meats, because the Danes send what London wants—long, lean bacon. Again, the Danish farmers take immense care of their swine. A great feature, which they hold to be of the greatest benefit, is to keep their piggeries very clean, very dry and very warm, especially in cold weather. I was up there when the thermometer stood at 18° below zero, and I could not help thinking it was the counterpart of your country in winter.

They have the same difficulties of weather and cold that you have to encounter, but they battle with the elements successfully, and the cowhouses and piggeries are pleasing to see, all the animals clean, dry and warm, and of course thriving and doing well. Now what Denmark has done with a very poor country and only two millions of people, Canada can do, and do easily. Only let the farmers see that to raise all the hogs they can will pay them better than anything else just as clearly as the Danes see it, and a big future is in store for Canada. The Danes are pushing the Irish bacon curers and pressing them very closely in market values in England to-day, and I feel certain they will outstrip the Irish farmer in the race. In Ireland they do not understand pig feeding and rearing nearly as well as the Danes do. In Ireland they over-feed, keep the hog wet and dirty underfoot, and pay little attention to the state of their piggeries. All this is most detrimental to hogs thriving fast and well. If you can induce the farmers of Canada to supply you with a suitable hog, we can find an outlet for any quantity, because Canadian bacon as prepared by you is in good favor and treads close upon the heels of Danish bacon in value; but you want a steady supply all the year round to keep the article always upon the market and in front of buyers.

General Remarks.

J. R. Martin, Cayuga, Haldimand: I spent this summer in Ireland, where they set great store on their pigs, feeding mixed food and looking for streaked bacon. The Suffolks are useless there and the Essex nearly as bad.

Wm. Cannon, Sydenham, Grey: Indications are that there will be a great deal more pork raised in this section next year than there has been for many years, as a great many sows have been kept for breeding.

L. A. Burkholder, Barton, Wentworth: Until within the last twenty years I used quite frequently to lose a hog by throat distemper as we called it. A neighbor told me that if I would let a few hens roost in the hog house it would prevent loss, and from that day until this I have had hens roosting above my pigs, and have not lost an animal from throat distemper since.

Dugald Graham, Toronto (of McGarry, Bland & Co., Montreal): In England and Wales hogs are raised mostly in the pasture and fed with cut clover, coarse grains and slops. In Ireland the potato takes the place of grains. I attach the greatest importance to the following points: (1) Warm and properly constructed pens, 7 to 10 hogs in a pen; (2) Raising two litters each season from each sow; (3) Good clover pasture while the pigs are growing; (4) Feeding with cut clover and pease—coarse grains always cut or ground and fed as slops; (5) Sell or kill the hogs at six months of age, or seven at most; (6) Weight should not exceed 240 lb. live weight; (7) The breed, long side, short head, long hair and white. It is admitted by all breeders of experience that, after a hog has taken on a certain amount of fat, all that is forced on after that point is reached costs more than can be got for it; hence experience is required, with common sense, to determine when that point is reached. The size, age and general constitution of each animal must be taken into the count. It is safe to say for the average hogs, that 150 to 180 lb. dressed is the safest weight to stop feeding at. Many Canadian farmers make the mistake of killing their hogs at too young an age. This is the greatest mistake of all. For profit a hog should not be marketed before five months old; the meat is then at its best.

Wm. Davies, sr. (of Wm. Davies & Co.) Toronto: If a boar of the right breed is used and a good big sow of native stock, I believe the progeny for feeding purposes will be quite equal to pure bred and generally more hardy. I believe a good breeding sow, one that has large litters and is a good nurse, should be kept till the young show signs of weakness of constitution, whether her age is four years or fourteen. Such a sow is invaluable. The rate of duty makes the manufacture of mess pork in Canada impossible; hence Ontario packers whether for local or export trade require not a fair amount of lean but absolutely lean hogs. Lean used to be synonymous with thin half-fed, but the Irish and Danes have solved the problem and have bred hogs that are well fed and thick but fleshy. Regarding grain feeding, I believe the best results can be obtained by feeding dry meal, with water accessible at all times. As to whether roots should be fed raw or cooked, it is not a moot point with packers; raw roots are ruinous. Marbled pork is simple nonsense; if this is ever seen it is in the ham and shoulder, and is an indication of thorough ripeness of condition, excellent in a bullock but detracting from value in a hog. Of course the belly is streaky in any breed.

John Adams, Scugog, Ontario: Both Jew and Gentile always appear to be ready to give poor piggy a kick and a curse; but the fact is that no animal on the farm is so clever and shrewd—so ready, like man, to look out for himself and appear piggish when pressed with hunger; and he is always on the alert to turn some cheap food to good account for the very individual who so often treats him so cruelly. I really love a nice little fat chubby pig of any breed.

W. H. McNish, Elizabethtown, Leeds and Grenville: A good course of lectures on hog raising at the farmers' institutes this winter would improve the breeding, management, etc., greatly, and we think that, if the matter were clearly and forcibly put before our farmers four times the number of hogs now handled in Ontario could be raised.

PREVENTION OF HOG CHOLERA.

BY PETER H. BRYCE, M.D., SECRETARY PROVINCIAL BOARD OF HEALTH.

Assuming the existence of hog cholera in a district, the great interests involved demand of Councils and Local Boards of Health prompt attention to the measures necessary for preventing any outbreaks of the disease in their respective municipalities, and for promptly stamping out the disease when it does occur.

Under the following sections of Chapter 205 Revised Statutes of Ontario, 1887, the Local Board's sanitary inspector is empowered to enter upon any premises and take such action as the circumstances may demand:

99.—(1) Any medical health officer or sanitary inspector may, at all reasonable times, inspect or examine any animal, carcass, meat, poultry, game, flesh, fish, fruit, vegetables, grain, bread, flour or milk exposed for sale or deposited in any place for the purpose of sale, or for preparation for sale, and intended for food for man; the proof that the same was not exposed or deposited for any such purpose, or was not intended for food for man, resting with the party charged; and if any such animal, carcass, meat, poultry, game, flesh, fish, fruit, vegetables, grain, bread, flour or milk, appear to such medical officer or inspector to be diseased, or unsound, or unwholesome, or unfit for food for man, he may seize and carry away the same, or cause it to be seized and carried away, in order that he may cause it to be destroyed or so disposed of as to prevent it from being exposed for sale or used for food for man.

(2) The person to whom the same belongs, or did belong at the time of exposure for sale, or in whose possession or on whose premises the same was found, shall be liable to a penalty not exceeding $100 for every animal, carcass, or fish, or piece of meat, flesh or fish, or any poultry or game, or for the parcel of fruit, vegetables, grain, bread or flour, or for the milk so condemned; or, at the discretion of the convicting justices or magistrates, without the infliction of a fine, to imprisonment for a term of not more than three months.

100. Any person who in any manner prevents any health officer or sanitary inspector from entering any premises and inspecting any animal, carcass, meat, poultry, game, flesh, fish, fruit, vegetables, grain, bread, flour or milk exposed or deposited for the purpose of sale and intended for food for man; or who obstructs or impedes any such medical officer or inspector, or his assistant when carrying into execution the provisions of this Act, shall be liable to a penalty not exceeding $25.

To enable the inspector to recognize the sources of danger, as also the measures to prevent such dangers being realised, he ought to know that the sources and channels of infection are as follows, arranged in order of frequency and importance according to D. E. Salmon, Chief of the Bureau of Animal Industries, Washington, D.C.:

(*a*) Pigs purchased from infected herds, or coming in contact with those from infected farms, or running over grounds occupied by diseased swine within the preceding two or three months.

(*b*) Infected streams may communicate the disease to herds below the source of infection.

(*c*) Virus may be carried in feed, on implements, and on the feet and clothing of persons from infected herds and premises.

(*d*) Winds, insects, birds and various animals may transport hog cholera virus.

With regard to the first source, it may be said that no pigs should be purchased from any locality until one year after the death of the last case of cholera. There are frequently near the end of an epizootic, chronic cases which may live for three or four months without showing any distinctive signs of disease until they suddenly die. The *post-mortem* examination usually reveals extensive ulceration of the large intestine. The disease may thus linger in a herd long after all danger has apparently subsided. By bringing any chronic cases in contact with hitherto unexposed healthy swine the disease may spring up anew. Experiments have shown that the diseased germs may all disappear from the soil within three or four months, but the uncertainty of knowing whether there are any chronic cases continually adding fresh virus to the soil makes the period of one year not too long to avoid the introduction of unexposed pigs. It is advisable, in districts where hog cholera is very prevalent and is rarely absent for any length of time, for farmers to raise their own pigs and not trust to any animals from outside. In this way infection may, at least in part, be kept under control. When animals have been obtained from places which are not above suspicion they should not be brought in contact with swine already on the place, but quarantined as far as possible from them and kept under careful observation for at least one month.

There is no reason to suppose that currents of air have much influence in spreading the disease. Observations at the experimental station of the Bureau of Animal Industries at Washington have left no doubt that healthy pigs may be kept on the same farm with diseased ones without becoming infected, provided the infection is not carried in feed and implements, or on the shoes or clothing of persons from the sick to the healthy. Moreover the disease is an intestinal malady, and all evidence points to infection through the food rather than through the air inspired.

Granted, then, that no communication between infected and uninfected farms exists, there still remains the danger due to the second cause, viz.: infected water-courses, upon which it is impossible to lay too much emphasis. In fact, if the disease exists anywhere along a stream all farms below that point are liable to infection, unless use of the water in any form whatever is given up during the season.

When there is a suspicion that a herd has been infected, although the disease has not yet appeared, isolation and other precautionary measures should be carried out with the same care as if the disease were actually present.

When hog cholera has appeared in a herd, or on a farm, precautions should be taken for two reasons, first, to prevent the virus from being carried to other farms and infecting other herds, and second to prevent the loss of the entire herd, or if this is not possible, to stamp out the disease in such a way that the ground shall not subsequently infect healthy animals. Rules to be observed may be summarised as follows:

(*a*) The dead animals should be immediately disposed of, either by burial or by burning.

(*b*) Streams should be carefully protected from pollution.

(*c*) No animals should be removed from any infected herd or locality to another free from the disease for at least six months after the last case of disease has disappeared.

(*a*) *The proper disposal of dead animals.* This is a matter of great importance, for the bodies not only contain the germs of the disease, but the latter will multiply enormously during the summer heat and in the internal organs after life has been extinguished. Each dead body must therefore be regarded as a focus of the disease unless properly disposed of. It may be buried. In such case it must be so deep that no animal can get at it. It should be covered by a layer of powdered or slaked lime several inches thick, and the ground over the body likewise sprinkled with a thin layer of the same. If the carcasses are burned, care should be taken that any parts not consumed are buried as directed.

(*b*) *The danger from infected streams.* This has already been mentioned at length. Streams must be protected by law in order that no sick animals be allowed to go near them, and that no carcasses be thrown into them or deposited where drainage may carry the virus from the body into the water. Nor should the drainage from pens be permitted to flow into them.

(*c*) *Mild form of cholera.* Hogs are frequently affected with cholera of a mild form, which lasts for several months before some form of septic infection or degenerative change in the internal organs produces death; hence it is important to insist upon knowing when the last case of disease occurred. Since it has been demonstrated that hog cholera germs may remain alive in the soil from three to four months, this rule will not appear unreasonable as a safeguard.

These rules will be sufficient, if properly executed, to confine the diseases within narrow limits. There is no doubt that hog cholera virus dies out over the greater part of our country after epizootics have swept over it. We have no reason to believe that it can survive in the soil from one end of the year to the other. It is, in fact, highly probable that it is transported and distributed from a few places where, for some reason, cases have occurred throughout the year and have thus kept the virus alive. There are no experiments on record which show that the hog cholera germ may be found in the soil and water independent of the disease. It has been looked for, but has never been found, excepting in the body or discharges of diseased swine. This fact ought to cause all exporters and importers of improved swine for breeding purposes, as well as all who import large consignments of hogs for slaughter—especially from the western states—to exercise the greatest care with regard to the cleanliness of the cars in which such hogs

are shipped. There can be no doubt that this is the most probable source of some of the outbreaks which from time to time have appeared at different points in Ontario. Infected hogs pollute freight cars; these again pollute the railroad tracks, and the rains, washing the virus into ditches, carry it to the waterways through farms, whence the hog becomes infected.

Compensation. It has been already seen that the municipal authorities should in the public interest at once see that active measures are taken for the suppression of any outbreaks of hog cholera, as of other infectious diseases whether in man or animals. But there is another duty which they can bring to the notice of the owner of the infected hogs, and this is to give notice of the outbreak to the Hon. the Minister of Agriculture at Ottawa. The reasons for this are contained in the following sections of the "Act respecting Infectious or Contagious Diseases affecting Animals," Revised Statutes of Canada, 1886, Chapter 69:

3. Every cattle or farm stock owner and every breeder or dealer in cattle or other animals, and every one bringing foreign animals into Canada, shall, on perceiving the appearance of infectious or contagious disease amongst the cattle or other animals owned by him or under his special care, give notice to the Minister of Agriculture at Ottawa of the facts discovered by him as aforesaid.

4. Every owner of such diseased cattle or other animals who neglects to comply with the provisions of the next preceding section shall forfeit his claim to compensation for any cattle or other animals slaughtered in accordance with the provisions of this Act, and no such compensation shall be granted him; and every person who maliciously or fraudulently conceals the existence of infectious or contagious disease amongst cattle or other animals shall incur a penalty not exceeding two hundred dollars.

12. The Governor in Council may, from time to time, cause to be slaughtered animals suffering from infectious or contagious disease, and animals which are or have been in contact with or close proximity to a diseased animal, or an animal suspected of being affected by infectious or contagious disease.

13. The Governor in Council may order a compensation to be paid to the owners of animals slaughtered under the provisions of this Act; and whenever the animal slaughtered was affected by infectious or contagious disease the compensation shall be one-third of the value of the animal before it became so affected, but shall not in any case exceed twenty dollars: in every other case the compensation shall be three-fourths of the value of the animal, but shall not in any case of grade animals exceed fifty dollars, and in any case of thoroughbred pedigree animals two-thirds of the value of the animal, not to exceed one hundred and fifty dollars; and in all such cases the value of the animal shall be determined by the Minister of Agriculture or by some person appointed by him.

FACTORIES AND CREAMERIES IN ONTARIO.

CHEESE FACTORIES IN OPERATION IN ONTARIO DURING 1889, WITH NAME AND POST OFFICE ADDRESS OF THE SECRETARY OF EACH FACTORY.

NOTE.—No return received from factory marked with asterisk (*).

County and Township.	Name of Factory.	Name of Secretary or other Officer.	Post Office Address.
ESSEX :			
Mersea	Blytheswood	C. W. Hind, Prop.	Blytheswood.
KENT :			
Camden	Dawn Mills	J. T. Racè, Prop.	Dawn Mills.
	*Thamesville	James Secord, Sec.	Thamesville.
Chatham	Chatham Centre	T. McKerrall, Sec.	Eberts.
	Chatham Gore	David McArthur, Pres.	Tupperville.
	*Sydenham Valley	J. N. McCoy	Wallaceburg.
	Wallaceburg	John Skinner, Man.	do
Harwich	Creek Road	John Buller	Harwich.
Howard	Botany	D. A. Graves	Botany.
Orford	Orford Cheese Mfg. Co.	Nelson Blue	Duart.
Raleigh	*Merlin	John H. Ballah	Merlin.
	*Scaman's	Wm. S. Scaman	Charing Cross.
	*Smith Bros.'	Smith Bros.	do
Tilbury East	Valetta	John Richardson	Valetta.
ELGIN :			
Aldborough	Crinan	W. H. McLean	Crinan.
	*Rodney	Wm. Johnston, Prop.	Rodney.
	Rosedale	Arch. McColl	Aldborough.
	West Lorne	John F. Taylor, Sec.	West Lorne.
Bayham	Bayham	E. T. Martin, Sec.	Griffin's Corners.
	Bayham Br. (Brownsville)	Benj. Hopkins, Sec.-Treas.	Brownsville.
	†New England	O. E. Twiss, Sec.	Tilsonburg.
	Nova Scotia St.	Miss J. Saxton, Sec.	Lakeview.
	*Talbot St.	George Bennett	Guysborough.
	Vienna	J. T. Gamble, Sec.	Vienna.
Dorchester S	Avon	Richard Jolliffe	Avon.
	Lyons	Thos. Wilkinson	Lyons.
	Springfield	John Clunas	Springfield.
Dunwich	Dutton	W. A. Ostrander, Prop.	Dutton. Box 217.
	Wallacetown	A. Keilor	Wallacetown.
Malahide	Dunboyne	Noble F. Tufford	Dunboyne.
	Malahide	R. Abell	Seville.
	Northwood	George Beckett	Aylmer.
Southwold	Erie	Daniel Black	Iona Station.
	Fingal	Thos. E. McLaughlin, Sec.	Fingal.
	Payne's Mills	Wm. Sharon, Sec.	Frome.
	West Magdala	R. R. Cranston, Prop.	West Magdala.
Yarmouth	Elgin	J. W. Scott, Prop.	Sparta.
	*Mapleton	Wm. Kirkley, Prop.	Springfield.
	Springwater	Asa Pound, Prop.	New Sarum.
	Yarmouth Centre	James Brown, Sec.	Yarmouth Centre.
NORFOLK :			
Charlotteville	St. Williams	G. W. Newman, Sec.	St. Williams.
	*Vittoria	John Pow, Sec.	Vittoria.
	Walsh	Walter Rollings, Sec.	Walsh.
Houghton	*Clear Creek	Elmer A. Spore, Prop.	Clear Creek.
	Houghton Centre	S. T. Jackson, Prop.	Houghton.
Middleton	Courtland	O. E. Twiss, Sec.	Tilsonburg.
	Delhi	G. R. Gray, Sec.	Delhi. Box 115.
Townsend	Bloomsburg	J. H. Lingwood, Sec.	Bloomsburg.
	Boston	H. Foster, Sec.	Boston.
	*Rockford, *Villa Nova	Wm. R. Shearer	Villa Nova.
	Waterford	L. N. Collver, Sec.	Waterford.

† Operated by Middleton & Bayham Co.

CHEESE FACTORIES IN ONTARIO.—*Continued.*

County and Township.	Name of Factory.	Name of Secretary or other Officer.	Post Office Address.
NORFOLK—*Con.*			
Walsingham	Carholme	James Knowles, Sec.	Carholme.
	Lynedoch	C. A. Ostrander, Prop.	Lynedoch.
	Marston	C. H. Brayley, Sec.	Marston.
Windham	Bookton	Norman McCurdy, Sec.	Bookton.
	Nixon	W. S. Wood, Sec.	Nixon.
	Ranelagh	G. A. Carter, Sec.	Ranelagh.
	*Vanessa	Wm. Bartholomew	Vanessa.
Woodhouse	Black Creek	W. C. Parsons, Prop.	Jarvis.
	Excelsior	W. H. Olds, Sec.	Simcoe.
	Lynn Valley	E. G. Ford, Prop.	Lynn Valley.
HALDIMAND:			
Canborough	Attercliffe Sta.	Wm. Shirton	Attercliffe Sta.
	Canborough	James N. Paget, Prop.	Canborough.
Cayuga N	Kohler	John J. Lint, Sec.	Kohler.
Cayuga S	South Cayuga	Jacob Albright, Sec.	South Cayuga.
Dunn	Lake View	F. Splatt	Dunnville.
Moulton	*Stromness	Arch. McDonald	Stromness.
Rainham	Selkirk	Joel Hoover	Selkirk.
Seneca	Tyneside	J. M. Clysdale, Prop.	Tyneside.
Walpole	Jarvis West	W. C. Parsons, Prop.	Jarvis.
	Springvale	John Hainer, Treas	Springvale.
	Walpole	John W. Bain, Prop.	Cheapside.
WELLAND:			
Bertie	Bertie	E. O. Disher, Sec.	Ridgeway.
Wainfleet	Forks Road	Enos Marr, Sec.	Forks Road.
	Wellandport	Hamilton Johnson	Wellandport.
LAMBTON:			
Bosanquet	Ridge Tree	George Sutherland, Sec.	Thedford.
Brooke	Aberfeldy	John J. Risk, Prop.	Aberfeldy.
	*Alvinston	Arch. McKellar	Alvinston.
	Brooke and Warwick	Alex Cowan, Sec.	Watford.
Euphemia	Annett's	John J. Risk, Prop.	Aberfeldy.
	Florence	J. W. Healy	Florence.
Moore	Colinville	Clement White, Sec.	Colinville.
Plympton	Gala Bank	Wm. Symington, Prop.	Camlachie.
	South Plympton	A. D. Anderson, Sec.	Wyoming.
	Uttoxeter	Edward Archer, Sec.	Warwick West.
Sarnia	Vyner	Miles Carrick, Sec.	Mandaumin.
Sombra	Sombra Cheese Co.	W. S. Howell, Sec.	Thornyhurst.
Warwick	*Maple Grove	B. Bachelor, Sec.	Birnam.
	Thompson	Wm. Thompson	Arkona.
	Warwick	Frank Kenward, Sec.	Warwick West.
HURON:			
Grey	Ethel	Robert Barr, jr., Prop.	Ethel.
	Grey and Morris	Daniel Stewart, Sec.	Brussels.
	Molesworth	Henry Coghlin, Sec.	Molesworth.
	Walton	R. H. Ferguson Sec.	Walton.
Howick	Fordwich	James Fallis, Sec.	Newbridge.
	Peoples	Wm. McKercher, Sec.	Wroxeter.
	Springbank	George Padfield, Sec.	Gorrie.
Hullett	Constance	R. Jamieson, Sec.	Seaforth.
McKillop	Winthrop	John C. Morrison, Sec.	Winthrop.
Stanley	Blake	Asa J. Styles, Sec.	Blake.
Stephen	Centralia	R. F. Hicks	Centralia.
	Corbett	M. A. Corbett, Sec.	Corbett.
	Crediton	Charles Brown	Crediton.
Tuckersmith	Rodgerville	James Murray	Rodgerville.
Turnberry	Bluevale	John Burgess, Sec.	Bluevale.
Wawanosh, E.	Belgrave	George Hood, Sec.	Sunshine.

CHEESE FACTORIES IN ONTARIO.—*Continued.*

County and Township.	Name of Factory.	Name of Secretary or other Officer.	Post Office Address.
BRUCE :			
Amabel	Wiarton	Geo. H. Johnson, Sec	Wiarton.
Arran	Tara	G. G. Mitchell, Sec	Tara.
Brant	Brant	Daniel Sullivan, Sec	Malcolm.
	Dunkeld	Thos. A. Chisholm, Sec	Dunkeld.
Bruce	Climax	Andrew Kirkconnell, Pres	Tiverton.
	Underwood.	Amos Hilker, Sec	Underwood.
Carrick	Belmore	John H. McHardy. Sec	Belmore.
	Otter Creek	Louis Braun, Sec	Walkerton.
Elderslie	Elderslie	J. McClure	Williscroft.
Greenock	Pinkerton	E. R. Emery, Sec	Pinkerton.
Huron	Huron	James Harrison, Pres	Kincardine.
	Paramount	Joseph Taylor, Sec	Lucknow.
	Pine River	John Thompson, jr., Pres	Pine River.
Kincardine	Armow	Wm. A. Shier, Sec	Armow.
	Bervie	James Glass	Bervie.
	Glammis	John McKellar, Prop	Tiverton.
	Millarton	Wm. Rutledge, Sec	Millarton.
Kinloss	Holyrood	George McIntosh, Sec	Holyrood.
	*Lucknow	J. A. Denning, Prop	Lucknow.
Saugeen	Burgoyne	T. B. Millar	Burgoyne.
	Star	George S. Webb, Prop	North Bruce.
GREY :			
Artemesia	Flesherton	James Brodie, Sec	Vandeleur.
	Markdale	Henry D. Irwin, Sec	Markdale
Bentinck	*Hanover Ch. Co	Andrew Magwood	Hanover.
Normanby	Alsfeldt Ch. & B. Co	C. H. Peterson, Sec	Clifford.
	Mount Forest	Joseph Tuck, Sec	Mount Forest.
	Varney	Chas. Ramage, Sec	Varney.
Osprey	Badjeros	George Bailey, Treas	Shrigley.
Proton	Dundalk	Robert Russell	Dundalk.
	*Enniskillen	Thomas McQuay	Inistioge.
	Ventry	James Cavanagh, Sec	Hopeville.
	Victoria	Wm. Haines, Prop	Inistioge.
SIMCOE :			
Flos	Elmvale	Wm. Harvey, Sec	Elmvale.
Nottawasaga	Avening	W. G. Carruthers, Sec	Avening.
	Glen Huron	James Connor	Glen Huron.
	Lavender	Samuel Flach	Lavender.
Tecumseth	Cookstown	W. F. Moore, Sec	Cookstown.
MIDDLESEX :			
Adelaide	Kerwood	A. McKenzie, Sec	Kerwood.
	Keyser	Geo. L. Smith, Sec	Keyser.
	†Mud Creek	R. J. Coulton	Springbank.
	*Victoria	John Fuller	Watford.
Biddulph	Cedar Vale	Michael Blake, Sec	Elginfield.
	North Middlesex	George W. Fox, Sec	Lucan.
Caradoc	Caradoc	Wm. E. Sawyer, Sec	Mount Brydges.
	Mount Carmel	D. Leitch, Sec	Strathroy.
	Muncey Road	John Stuart	Mount Brydges.
Delaware	Delaware	H. J. Smith, Sec	Lambeth.
Dorchester N	Burnside	S. Barr, Sec	Mossley.
	*Dorchester Station	D. Buchanan	Dorchester Sta.
	Gladstone	J. B. Lane, Treas	do
	Gore	James Smith, Manf	Crampton.
	Harrietsville	F. Kunz	Harrietsville.
	Thames	J. A. James, Manf	Nilestown.
Ekfrid	Appin	Hector McFarlane, Sec	Glencoe.
	Mayfair	John Cooper	Melbourne.
London	Birr	C. A. Smith, Sec	Birr.
	Bryanston, Devizes	Robert Elliott, Sec	Plover Mills.
	Geary	John Geary, Prop	London, Box 132.
	North Branch	Fred Bailey	Rebecca.
	Proof Lime	James Tier, Sec	Arva.
	Sell's	P. J. Thompson, Sec	Lobo.
	Union Hill	R. H. Harding, Sec	Thorndale.

†Started season but closed down for want of milk.

CHEESE FACTORIES IN ONTARIO.—*Continued.*

County and Township.	Name of Factory.	Name of Secretary or other Officer.	Post Office. Address.
MIDDLESEX.—*Con.*			
McGillivray	*West McGillivray	Wm. Fraser	W. McGillivray.
Metcalfe	Napier	Wm. Ormerod, Manf.	Napier.
	Sifton's	Thos. H. Payne, Sec	Cairngorm.
Mosa	Glencoe	Hector McFarlane, Sec	Glencoe.
	*Wardsville	John A. Cole, Sec	Wardsville.
Nissouri W	Blanshard and Nissouri	Fergus McMaster, Sec	St. Marys.
	Cherry Hill	Hope Webster, Sec	Thamesford.
	Nissouri West	W. Lee, Sec	Thorndale.
Westminster	Belmont	John Evans, Manf.	Belmont.
	Belmont Branch	A. E. Carrothers, Sec	do
	Glanworth	Jas. A. Glen, Sec	Glanworth.
	North Street	W. Dingman	Lambeth.
	Pond Mills	John McDougal	Pond Mills.
	White Oak	John H. Burnard, Sec	White Oak.
Williams W	Rob Roy	Wm. Dickson, Sec	Parkhill.
OXFORD:			
Blandford	Bright	John Riesberry, Pres	Bright.
	Eastwood	W. E. Hopkins, Sec	Eastwood.
Blenheim	Soho Ch. & B. Co	J. D. Scott, Sec	Richwood.
Dereham	Brownsville, Culloden, Tilsonburg	Benjamin Hopkins, Sec	Brownsville.
	Dereham and Norwich	Wm. Jones, Sec	Mount Elgin.
	Dereham and Oxford	A. R. McNiven, Sec	Ingersoll.
	Lawson's	J. P. Harris, Sec	Holbrook.
	Mount Elgin	James V. Bodwell, Sec	Mount Elgin.
	Prouse's	Thomas Prouse, Prop	do
	Salford	J. P. Harris, Sec	Holbrook.
	Verschoyle	James Hunter, Sec	Verschoyle.
	*Wilkinson's	J. H. Wilkinson	do
Nissouri E	Kintore	D. R. Calder, Sec	Kintore.
	Kintore (East branch)	Thos. W. Alderson, Sec	do
	*Lakeside	Robert Marshall	Lakeside.
	Murray Bros	W. Murray, Sec	St. Marys.
	Thamesford	David Lawrence, Sec	Thamesford.
	*Walker's	Edward Horsman	do
Norwich N	*Dunkin's	George Dunkin	Norwich.
	*Ontario	I. L. Farrington	do
	*Smith's	Robert Snell, Sec	do
Norwich S	Springford	F. C. Anstice, Sec	Springford.
	Summerville	S. A. Innes	Otterville.
Oxford E	Diamond	J. McConnell	Vandecar.
	Oxford, East and West	M. S. Schell, Sec	Woodstock.
Oxford N	Maple Leaf	Thos. Caddey, Prop	Ingersoll.
	Oxford, North	W. A. Sutherland, Sec	Ingersoll (Box 111)
Oxford W	Harris Street	T. L. Newton	Salford.
	Oxford, West	W. G. Francis	Ingersoll.
Zorra E	Blandford and Zorra, East.	A. Miller, Sec	Walmer.
	German Union	Christian Schrag, Manf.	New Hamburg.
	Honey Grove	Robert Morton, Prop.	Cassel.
	Spring Creek	H. C. Facey, Sec	Woodstock.
	Strathallan	Absalom Glaves, Sec	Hickson.
	Zorra, East, Central	James Anderson, Sec	Strathallan.
Zorra W	Brooksdale	Wm. Matheson	Brooksdale.
	Cold Springs	Hugh Matheson, Prop	Youngsville.
	Zorra, West	Wm. Loveys, Sec	Embro.
BRANT:			
Burford	Cathcart	Chas. Kelly	Cathcart.
	*Harley	C. Hartley	Harley.
	*Kelvin	Joseph McCombs, Sec	Kelvin.
	New Durham	James Paterson, Sec	New Durham.
Dumfries S	*St. George	John Richardson, Prop.	St. George.
Oakland	Oakland	George Taylor	Oakland.

CHEESE FACTORIES IN ONTARIO.—*Continued.*

County and Township.	Name of Factory.	Name of Secretary or other Officer.	Post Office Address.
PERTH :			
Downie	Avonbank	Wm. Tier	Motherwell.
	*Black Creek	Thos. Ballantyne, M.P.P	Stratford.
	Downie	H. A. Southwick, Prop	Avonton.
	Gore of Downie	John Dempsey, Prop	Fairview.
	Kastnerville	Geo. Barthel, Prop	Stratford.
Easthope N	Avondale	John Wilford, Prop	Shakespeare.
Easthope S	Tavistock	Wm. Gillard	Tavistock.
Ellice	*Kinkora	Chas. Stock	Stratford.
Elma	Britton	Wm. Stevenson	Britton.
	Donegal	Samuel McAllister	Donegal.
	Elma	Wm. Lochhead, Sec	Atwood.
	Elmbank	Robert Cleland	Listowel.
	Gotham	Joseph Freeman	Britton.
	Monkton	Andrew Erskine, Sec	Monkton.
	Newry	John Morrison, Sec	Newry.
	Silver Corners	Geo. Richmond, Sec	do
	Trowbridge	John R. Code	Trowbridge.
Fullarton	Cold Creek	Thomas Stacey, Sec	Fullarton.
Logan	Willow Grove	Wm. Squire	Bornholm.
Mornington	Carthage	Wm. Campbell, Pres	Carthage.
	Milverton	Moses Knechtel	Milverton.
	Newton	Hugh Jack	Newton.
Wallace	Cedar Grove	George V. Pool, Sec	Wallace.
	Wallace	Jeptha Vankleeck, Sec	Listowel.
WELLINGTON :			
Arthur	Conn	G. J. McCulloch, Treas	Conn.
	Kenilworth	George Cushing, Sec	Kenilworth.
Luther W	Arthur and Luther	John McNab, Sec	Arthur.
Maryborough	Maryborough	Wm. Wilson, Sec	Rothsay.
	Riverbank	Joseph Gilmore, Sec	Arthur.
	Wyandotte	Thos. J. Paterson, Sec	Moorefield.
Minto	Harriston	W. D. McLellan, Sec	Harriston.
	Minto and Arthur	James Wiseman, Sec	Cotswold.
	Palmerston	R. Andrews, Sec	Palmerston.
Peel	Goldstone	W. T. Whale, Sec	Goldstone.
	Peel	John Hought, Sec	Glenallan.
WATERLOO :			
Dumfries N	*Galt	W. P. Clay	Galt.
Wellesley	Bamberg	Jacob Kaufman, Sec	Bamberg.
	Honey Grove	J. W. Chalmers, Prop	Poole.
Wilmot	*Oak Grove	John Steiner	New Hamburg.
	Philipsburg	John D. Schantz, Prop	Philipsburg.
Woolwich	Woolwich	Eli H. Bauman	St. Jacobs.
DUFFERIN :			
Amaranth	Laurel	Jonathan Varcoe, Sec	Laurel.
Melancthon	Shelburne	Jacob Walker, Treas	Shelburne.
LINCOLN :			
Caistor	Caistorville	Adam Spears, Sec	Caistorville.
Clinton	*Beamsville	Arthur Hunter	Beamsville.
	Campden	H. S. Hummel, Sec	Campden.
Gainsborough	Bismarck	John L. Heaslip, Sec	Wellandport.
WENTWORTH :			
Ancaster	*Renforth	D. Hamilton	Renforth.
Beverly	Beverly	John Ireland, Sec	Rockton.
	Sheffield	C. W. Laing, Prop	Sheffield.
PEEL :			
Chinguacousy	Norval	Robert Groat, Prop	Georgetown.
YORK :			
King	Eversley	John Ness	Eversley.
Markham	Cedar Grove	Mrs. J. N. Raymer, Mnfr	Box Grove.
	Ringwood	A. B. Grove	Ringwood.

CHEESE FACTORIES IN ONTARIO.—*Continued.*

County and Township.	Name of Factory.	Name of Secretary or other Officer.	Post Office Address.
ONTARIO:			
Whitby E	Geneva	James Burns	Columbus.
DURHAM:			
Clarke	Newtonville	W. J. Jones	Clarke.
Darlington	Darlington	L. M. Courtice, Pres	Courtice.
	Hampton	F. L. Ellis, Sec	Hampton.
Hope	Hope	Wm. Henwood, Sec	Welcome.
	Perrytown	Fred. Currelley, Sec	Canton.
NORTHUMBERLAND:			
Alnwick	Roseneath	Dennis Keogan, Sec	Hastings.
Brighton	Brighton and Murray	Isaac W. Hennessey, Sec	Wooler.
	Codrington	A. D. Richards, Pres	Codrington.
	Hilton	A. E. Thorne, Sec	Hilton.
	*Percy and Brighton	A. W. Huyck, Prop	Castleton.
	Standard	James O'Connell, Sec	Warkworth.
	*Strong's	Hugh Strong, Prop	Hilton.
Cramahe	Castleton	R. R. Philp, Pres	Castleton.
	Cramahe	R. A. Brintnall, Treas	Dundonald.
	Morganston	Homer Platt	Morganstown
	Salem	S. E. Dixon	Colborne.
Haldimand	Eddystone	George Gillespie	Vernonville.
	Haldimand	E. A. Hinman	Grafton.
	Spring Valley	A. G. McDonald, Prop	Burnley.
Hamilton	Baltimore, Crown	Samuel Philp	Baltimore.
	North Star	John C. Rosevear, Pres	Cold Springs.
Monaghan S	Bensfort	Thomas Dodds, Sec	Bensfort.
Murray	Fountain	E. Buck	Frankford.
	Maple Leaf, B	C. W. Wright, Sec	do
	*Queen's	J. Huffman, Mgr	do
	Smithfield	W. H. Potts, Sec	Smithfield.
Percy	Brickley	W. Bensley, Prop	Warkworth.
	Model	James Oliver, Sec	do
	Warkworth	W. T. Wiggins, Sec	do
Seymour	Brae	Gilbert Bedford, Sec	Campbellford.
	Crow Bay	James C. Cleugh, Sec	Sarginson.
	Empire	Robert White, Pres	Campbellford.
	*I. X. L	John Govan, Pres	do
	Meyersburg	Wm. Clark, Sec	Meyersburg.
	Prince of Wales	John Clark, Sec	Campbellford.
	Rylestone	Arch. Morton	Springbrook.
	Seymour West	E. C. West, Sec	Campbellford.
	Stanwood	James B. Peoples, Sec	Preneveau.
	Valley	John Clark, Sec	Campbellford.
	Woodland	F. Macoun, Sec	do
PRINCE EDWARD:			
Ameliasburg	Mountain View	A. J. Potter	Mountain View.
	Redmerville	John G. Peck, Pres	Albury.
Athol	Cherry Valley	Luther Platt, Sec	Cherry Valley.
Hallowell	Allisonville	James Calnan	Allisonville.
	Bloomfield	David S. Hubbs, Sec	Bloomfield.
Marysburg N	Lake View	G. N. Rose, Sec	Waupoos.
	Union	Robert Davison, Sec	Picton.
Marysburg S	Black Creek	Wm. Call, Sec	Milford.
	Point Traverse	Alva Rose	South Bay.
	*Royal Street	Walter Striker, Prop	Milford.
Sophiasburg	Beaver	Thomas Wright, Sec	Gilbert's Mills.
	*Big Island	Ryerson Rankin	Demorestville.
	*Elm Brook	Richard Benson	Picton.
	*Grape Vale	James Roblin	Fish Lake.
	Maple Leaf	Alfred Foster	do
	Northport	Ira David, Pres	Solmesville.

CHEESE FACTORIES IN ONTARIO.—*Continued*

County and Township.	Name of Factory.	Name of Secretary or other Officer.	Post Office Address.
LENNOX AND ADDINGTON:			
Adolphustown	*Adolphustown	Percival Platt	Adolphustown.
Camden	Camden East	George E. Hinch, Sec	Camden East.
	Centreville	Wm. Whelan, Treas.	Centreville.
	Enterprise	A. B. Carscallen, Sec.	Enterprise.
	Moscow	Vanluven Bros., Props.	Moscow.
	Newburgh	George A. Aylesworth, Sec.	Newburgh.
Ernesttown	Bath	W. R. Gordanier, Sec.	Morven.
	Empey	P. E. R. Miller, Sec.	Switzerville.
	Odessa	James C. Fraser, Sec.	Odessa.
	Union	W. R. Gordanier, Sec.	Morven.
	Wilton	Robert Metzler, Prop.	Wilton.
Fredericksburg N.	Napanee	W. N. Dollar, Sec.	Napanee.
	Phœnix	Charles. B. Parks, Sec.	Hay Bay.
Fredericksburg S.	Phippen's	Wm. Phippen, Prop.	Sandhurst.
	*Sillsville	James Rennie	Sillsville.
Kaladar	Flinton	R. E. Jones	Flinton.
Richmond	Forest Mills	W. J. Sergeant, Sec.	Kingsford.
	*Selby	Ira B. Hudgins	Selby.
Sheffield	Sheffield	D. E. Rose, Sec.	Tamworth.
FRONTENAC:			
Bedford	Fermoy, Salem	John McGuire, Sec	Westport.
	Tichborne	Joseph Kenny, Prop.	Tichborne.
Hinchinbrooke	Parham	David Goodfellow	Parham.
Kennebec	*Arden	W. B. Mills	Arden.
Kingston	Glenburnie	John Hay, Sec.	Glenburnie.
	Glenvale	J. Watts	Glenvale.
	*Lake Shore	P. E. Ward	Kingston.
	Maple Grove	F. P. Grass	do
	Pious Hollow	T. A. Keenan	Mt. Chesney.
	Union	Joshua Knight	Elginburg.
Loughborough	Forest	John Moreland, Sec.	Sydenham.
	*Live and Let Live	Keely & McAuley	Railton.
	Mountain View	James W. Nobes	Oates.
	Perth Road	Wm. Guthrie, Sec.	Perth Road.
Pittsburg	Granite Hill	F. J. Henderson, Sec.	Pittsferry.
	Leo Lake	John P. Bower	Seeley's Bay.
	*Maple Leaf	Thomas Bell	Birmingham.
	Morning Star	Daniel McLean	Eric.
	Pine Grove	John Dillon	Brewer's Mills.
	*Pine Hill	D. Trotter	Cushendall.
	Rose Hill	James R. Barnes, Sec.	Dufferin.
	*Woodburn	D. Ray	Willetsholme.
Portland	Bellrock	Vanluven Bros., Props.	Moscow.
	Bradshaw	Robert McLean, Sec.	Harrowsmith.
	*Hartington	Thomas Leonard, Sec.	Hartington.
	Verona	Howard Reynolds, Prop.	Verona.
Storrington	Battersea	W. J. Anglin	Battersea.
	Cold Springs	C. W. Langwith, Sec.	Sunbury.
	Duff's	Alexander Ritchie, Sec.	Inverary.
	Excelsior	J. L. Keelor, Prop.	Battersea.
	*Lake View	Adam Barr	Inverary.
	Sand Hill	W. W. Sands, Sec.	Sunbury.
	*Storrington	L. W. Murphy	Brewer's Mills.
	Sunbury	Gordon Waldron, Sec.	Sunbury.
	Washburn	Henry McBroom	Washburn.
Wolfe Island	St. Lawrence	Rattray & Kenny, Props	Wolfe Island.
LEEDS AND GRENVILLE:			
Augusta	Charleville, Grenville, Domville, Central Augusta	J. W. Place, Sec.	Prescott.
	Maple Grove	F. K. Wright, Sec.	Algonquin.
	Roebuck	James Keating, Sec.	Roebuck.
	†St. Lawrence Star	John McLean	Maitland.
	South Branch	Frank Meech, Sec.	North Augusta.

† Received too late for estimates.

CHEESE FACTORIES IN ONTARIO.—*Continued.*

County and Township.	Name of Factory.	Name of Secretary or other Officer.	Post Office Address.
LEEDS AND GRENVILLE—*Continued.*			
Augusta—*Con.*	*Throoptown	Thomas Thorpe	Throoptown.
	Victory No. 1	John S. Ralph	North Augusta.
	Willow	Andrew McNish, Sec.	Brockville.
Bastard and Burgess S.	*Delta Pure Cream	Robert Whaley	Delta.
	Elmwood	James Wood	Lombardy.
	Grand Central	E. Bowser, Sec.	Delta.
	*Meyers' Combination (2)	Thomas Meyers	Portland.
	North Shore	T. C. Singleton, Prop.	Newboro'.
	People's Mutual	Thomas G. Morris	Forfar.
	Philipsville	L. U. Phelps, Sec.	Philipsville.
	Plum Hollow	Ambrose Derbyshire	Plum Hollow.
	Poole	Wm. N. Poole, Mfr.	Freeland.
	Reliable	Rogers & Co., Props.	Newboyne.
	*Smith's Valley	Wm. N. Littlejohn	Harlem.
Crosby N.	Ardmore, Westport	John McGuire, Sec.	Westport.
	Centreville, Model	T. C. Singleton, Prop.	Newboro'.
Crosby S.	*Clear Lake	Thos. Leggett	Singleton.
	Dominion	E. V. Halladay, Prop.	Elgin.
	Elgin Union	B. L. Halladay	do
	Maple Grove	S. M. Halladay, Mfr.	do
	Morton	R. H. Somerville	Morton.
	Rockdale	J. R. Dargavel	Elgin.
	Singleton	T. C. Singleton, Prop.	Newboro'.
Edwardsburg	Cardinal	Alex. Smith, Sec.	Cardinal.
	*Eager's Combination (4)	Wm. Eager	South Mountain
	Millar's Nos. 1, 2 and 3	Millar & Ferguson, Props.	Spencerville.
	Thompson's Nos. 1 and 5	W. H. Thompson	Pittston.
	Thompson's No. 4	A. D. VanCamp, Sec.	Prescott.
Elizabethtown	*Anvern	A. C. Johns, Prop.	Fairfield East.
	Barlow	C. L. McCready, Sec.	Addison.
	*Excelsior	J. H. Davidson	Brockville.
	Kilbourn Springs	W. E. Kilbourn, Sec.	do
	Leeds Union	C. M. Taylor, Sec.	Lyn.
	*Maple Grange	M. F. Hughes, Prop.	do
	Palace	Cyrenus Stowell, Sec.	Addison.
	Royal Dominion	T. W. Horton	New Dublin.
	*Star	C. M. Taylor, Sec.	Lyn.
Elmsley S.	*Hunter	R. W. Strong, Prop.	Brockville.
	*Maple Leaf	Michael O'Mara	Lombardy.
Gower S.	*Eager's Comb. (1)	Wm. Eager	South Mountain.
Kitley	Farmer's Choice	Fred. W. Scovill	Athens.
	*Frankville	W. D. Livingstone	Frankville.
	Newbliss	John Mackay, Sec.	Newbliss.
	*Robinson	Alex. Cameron	Smith's Falls.
	Silver Creek	George S. Stratton, Sec.	Toledo.
Leeds and Lansdowne.	Bay	Robert Wilson, Sec.	Wilstead.
	*Bruce	J. S. Landon, Sec.	Lansdowne.
	Cold Glen	J. Willoughby, Prop.	do
	*Deerlick	John Cowan	do
	Dulcemain	Wm. Sliter	Warburton.
	*Fairfax	John A. Heaslip	Sand Bay.
	*Gananoque	Wm. Goodbody	Gananoque.
	Gananoque Junction	John Conner	do
	Lake View	James Berney, Sec.	Lyndhurst.
	Lyndhurst	Henry Green, Prop.	do
	Oak Leaf	Ormond Green	Oak Leaf.
	*People's	Henry McCalpin	South Lake.
	Rapid Valley	C. A. Bradley	Lansdowne.
	St. Lawrence	George E. Bodkin, Sec.	Escott.
	Sand Bay	Benjamin Herbison, Sec.	Sand Bay.
	Seeley's Bay	R. Gardiner	Seeley's Bay.
	*Springvale	Wm. A. Denny	Sweet's Corners.
	Tilley	James W. Grier, Sec.	Lansdowne.
	Warburton	John Cook, Sec.	Warburton.
	Washburn	J. E. Johnson, Sec.	Soperton.

CHEESE FACTORIES IN ONTARIO.—*Continued.*

County and Township.	Name of Factory.	Name of Secretary or other Officer.	Post Office Address.
LEEDS AND GREN.—*Con.*			
Oxford on Rideau	*Bishop's Mills	Wm. Connell	Bishop's Mills.
	*Kemptville	Orlando Bush	Kemptville.
	*Maple Ridge (Eager's)	Moses Edwards	Oxford Mills.
	*Millar's Corners	Orlando Bush	Kemptville.
	Oxford Mills	Levi Patton	Oxford Mills.
	Patterson's Corners	John Anderson, Prop	do
Wolford	*Old Fairfield	Rufus Bissell, Sec	Easton's Corners.
	Rideau Valley	John Kerr, Sec	Merrickville.
Yonge and Escott	Caintown	James White, Sec	Caintown.
	Elbe	Bates & Brown, Props	Elbe Mills.
	Escott Union	W. H. Warren	Rockfield.
	Farmersville	Lester A. Brown	Athens.
	Holland	H. C. Lynch, Sec	Escott.
	*Junetown A	Francis Fortune, Sec	Caintown.
	*Junetown B	Newton Avery	do
	Leeds County	Chas. S. Snider, Sec	Lyn.
		T. G. Tennant, Manf	Yonge Mills.
	*Lillie Springs	C. M. Taylor, Sec	Lyn.
	Mallory's	A. W. Mallory	Mallorytown.
	Ronan's	Jas. K. Redmond, Sec	Athens.
	*Springfield Union	N. E. Mallory, Sec	Escott.
	Thousand Islands	Chas. Cornwall	Rockport.
DUNDAS :			
Matilda	*Dundela	John W. Cooper	Dundela.
	*Eager's Comb. (3)	Wm. Eager	South Mountain.
	Farmer's	T. Coulter, Sec	Iroquois.
	Iroquois, Maple Grove	McDonald & McCullough	Morrisburg.
	Model No. 1	E. A. Roode, Prop	Hulbert.
	Morrisburg	Thomas Moorhouse, Sec	Morrisburg.
	†Thompson's No. 2	Thomas Scott, Sec	Glen Stewart.
	*Thompson's No. 3	James Liezert, Prop	Dixon's Corners.
	Thompson's No. 6	W. H. Thompson	Pittston.
Mountain	*Eager's Comb. (2)	Wm. Eager	South Mountain.
	Rose & Co. No. 1	John McTavish	Vancamp Mills.
	*Thompson's No. 9	Edward Scott, Prop	Heckston.
Williamsburg	Archer	G. C. Tracy, Sec	Archer.
	Dennison	Richard Dennison, Prop	do
	*Eager's Comb. (2)	Wm. Eager	South Mountain.
	Elma, *Colquhoun	John N. Logan	Elma.
	Grantley, Hoasic	Thos. McDonald, Prop	Morrisburg.
	Hussey	Isaiah Barkley	Dunbar.
	North Williamsburg	James Dickey, Sec	N. Williamsburg.
Winchester	Chesterville	Thos. McDonald, Prop	Morrisburg.
	*Eager's Comb. (6)	Wm. Eager	South Mountain.
	Kendrick & Carlyle	Wm. R. Allison, Sec	Dunbar.
	Rose & Co. No. 2	John McTavish, Sec	Vancamp Mills.
	Short's Creamery	D. Halliday	Cassbridge.
	West Winchester	E. H. Mills	West Winchester.
STORMONT :			
Cornwall	†Allangrove Comb. (1)	D. M. Macpherson	Lancaster.
	*Black River, *Monckland..	P. N. Tait	Mille Roches.
	*Mille Roches, *St. Andrews.		
	*Cornwall Centre	J. A. Roys, Prop	do
	Moulinette	H. Harrison, Sec	Moulinette.
Finch	Berwick Nos. 1 and 2	James Small, Prop	Berwick.
	Crysler	F. Richards, Treas	Crysler.
	Goldfield	P. A. Casselman	Grantley.
	South Finch	Thos. McDonald, Prop	Morrisburg.
Osnabruck	*Dickenson's Landing	Chas. S. Baker	Wales.
	Dixon	J. C. Stata, Sec	Lunenburg.
	Farran's Point	John R. Farran, Sec	Farran's Point.
	Lunenburg	H. McEwan, Sec	Lunenburg.
	Newington	Wm. Wood	Newington.
	North Osnabruck	Edgar Alguire	North Valley.
	White Clover	George H. Jackson, Sec	Gallingertown.

†Received too late for estimates.

CHEESE FACTORIES IN ONTARIO.—*Continued.*

County and Township.	Name of Factory.	Name of Secretary or other Officer.	Post Office Address.
STORMONT.—*Con.*			
Roxborough	†Allangrove Comb. (3)	D. M. Macpherson	Lancaster.
	Berwick No. 3	James Small	Berwick.
GLENGARRY :			
Charlottenburg	†Allangrove Comb. (10)	D. M. Macpherson	Lancaster.
	Camerontown, Tyotown	Thos. McDonald, Prop.	Morrisburg.
	Fraser's Point	D. A. Fraser	South Lancaster.
	*Glen Gordon	W. D. McLeod	Lochiel.
	Lilly White	John J. McMartin	Martintown.
	*Munro's Mills	D. A. McDonald	Alexandria.
Kenyon	†Allangrove Comb. (9)	D. M. Macpherson	Lancaster.
	Greenfield	J. J. Cameron, Sec	Greenfield.
	*McPhee's (8th Con)	Donald Kennedy	St. Elmo.
Lancaster	†Allangrove Comb. (6)	D. M. Macpherson	Lancaster.
	Thistle No 1	Sangster & McCuaig	Bainsville.
Lochiel	†Allangrove Comb. (2)	D. M. Macpherson	Lancaster.
	Breadalbane	James Hurley, Sec	Barb.
	*Maple Grove	James Irvine	Dalkeith.
	*Northern Spring Creek (7)	Wm. D. McLeod	Kirkhill.
PRESCOTT :			
Alfred	Alfred	F. W. Langrell, Sec	Alfred.
	Dubois	Leopold Cote, Sec	Lefaivre.
Caledonia	Molloy's	James Proudfoot	Fenaghvale.
	*	Donald McLeod	Dunvegan.
Hawkesbury E	Hawkesbury E., Nos. 1 and 2	James Hurley, Sec	Barb.
	Maple Leaf No. 1	J. C. McAlpine, Sec	St. Ann d' Presc't.
	Maple Leaf No. 2	Joseph Seguin	Point Fortune.
	*Monolea Nos. 1 and 4	Thos. Ross & Son, Props	Little Rideau.
	*Three factories	McCuaig & Cheney	Vankleek Hill.
	*One factory	Samuel Stephens	do
	* do	John McNish	do
	* do	Daniel Wyman	Chute à Blondeau.
	* do	Wm. Hay	St. Ann d' Presc't.
	* do	Amédé Leroux	St. Eugene.
	* do	Joseph Vachon	Mongenais.
awkesbury W	*Green Lane	Jas. G. Higginson	Hawkesbury.
	Spring Grove	S. N. Morrison, Prop	Henry.
	*Vankleek Hill	Denovan & McKinnon	Vankleek Hill.
	*Two factories	McCuaig & Cheney	do
Longueuil	*Cassburn	James Cross, Sec	Cassburn.
Plantagenet N	Centrefield	Louis Charbonneau	Plantagenet.
	Treadwell	Gideon Senecal, Prop	Treadwell.
Plantagenet	Fournier	Stephen Surch, Sec	Fournier.
	Lalonde, Riceville	A. McLean, Sec	Riceville.
	Pendleton	Henry Moffatt, Prop	Pendleton.
	*St. Isidore	John Sicotte, Prop	St. Isidore de Prescott.
RUSSELL :			
Cambridge	St. Albert	Damase Meilleur	St. Albert.
Clarence	Cobs Lake	Dr. DesRosier	Clarence Creek.
		Damase Meilleur	St. Albert.
Cumberland	Russell, Nos. 1, 2 and 3	W. A. Monroe	Navan.
CARLETON :			
Fitzroy	River View	John Stevenson	Kinburn.
	Union Pride	J. Tierney, Sec	Arnprior.
Goulbourn	Golden	Henry Vaughan, Sec	Stapledon.
	Ottawa Valley	Adam Abbott, Sec	Hazledean.
Gower N	North Gower	Edward Kidd	North Gower.
	*Eager's Comb. (1)	Wm. Eager	South Mountain.
Huntley	Carp	Edward Kidd, Sec	North Gower.
March	Dunrobin	J. J. Younghusband, Sec	Dunrobin.
Marlborough	Burritt's Rapids	Edward Kidd	North Gower.
Osgoode	*Eager's Comb. (3)	Wm. Eager	South Mountain.
	*Lorne	John Campbell	Dalmeny.
	Manotick	Edward Kidd	North Gower.
	Osgoode No. 10	A. Walker, Sec	Metcalfe.
	*Osgoode No. 12	H. D. York	do
	White Globe	G. M. Donaldson	Vernon.

†Received too late for estimates.

CHEESE FACTORIES IN ONTARIO.—*Continued.*

County and Township.	Name of Factory.	Name of Secretary or other Officer.	Post Office Address.
RENFREW:			
Horton	Maple Home	Robert McLaren, Sec	Renfrew.
Ross	Forester's Falls	Wm. Grant, Prop	Forester's Falls.
Wilberforce	Rankin	Thomas Leech	Rankin.
LANARK:			
Bathurst	*Bathurst	James Patterson	Manion.
	*Fallbrook	Walter Cameron	Fallbrook.
	Harper	Joseph Warren, Sec	Harper.
	Scotch Line	Samuel Wilson	Allan's Mills.
Beckwith	Beckwith	Thomas Nesbitt, Sec	Carleton Place.
	Valley Queen	Peter McEwen, Sec	Franktown.
Dalhousie	Watson's Corners	W. A. Moore	Perth.
Drummond	Balderson	Andrew Allan, Sec	Balderson.
	Dexter	Donald McPhail, Sec	McPhail.
	Drummond Centre	Wm. J. McCreary, Sec	Innisville.
	Mississippi, Riverside	C. A. Matheson, Sec	Perth.
Elmsley N	Lone Star	B. S. Snyder, Sec	Port Elmsley.
Lanark	*Boyd's	Alfred Hammond	Innisville.
	Fairplay	Thomas Jackson	do
	Hopetown	John Stewart, Sec	Hopetown.
	Middleville	A. R. McIntyre, Sec	Middleville.
Montague	Roseville	Hugh Clark, Sec	Montague.
	Thompson's No. 7	Isaac Cram, Sec	Smith's Falls.
Ramsay	Mississippi Pride	James Robertson	Almonte.
	Rosedale	Richard Reilly, Sec	Clayton.
Sherbrooke S	*Lake View	Albert Norris	Althorpe.
	*Maberley	Henry Rigney	Maberley.
VICTORIA:			
Fenelon	Cambray	H. J. Lytle	Cambray.
	Fenelon Falls	F. Sandford, Prop	Fenelon Falls.
Mariposa	Little Britain	Owen Yearsley	Port Hope.
	Mariposa	David Rogers, Sec	Linden Valley.
Ops	Reaboro	J. A. Brown	Reaboro.
Verulam	Bobcaygeon	I. L. Read, Sec	Bobcaygeon.
	Scotch Line	Morgan Johns, Sec	do
	*Star	Thomas Robertson	Dunsford.
PETERBOROUGH:			
Asphodel	*Norwood	Wm. Buck	Norwood.
	Ormond	James O'Reilly	Hastings.
	Westwood	John Lancaster, Sec	Westwood.
Belmont	Melrose Abbey	Samuel Elliott, Sec	Norwood.
	Star	Jas. B. Peoples, Sec	Preneveau.
	*Trentbridge	Stephen Watson, Prop	Trentbridge.
Douro	Maple Leaf	David Pilkey, Sec	Peterborough.
	Pine Grove	E. J. Abbott, Sec	Lakefield.
Dummer	*South Dummer	S. S. Spence	Cottesloe.
	Warminster	S. R. Payne, Sec	Warsaw.
	Warsaw	E. Hawthorne, Sec	do
Ennismore	Myrtle	R. J. Scollard, Sec	Ennismore.
Otonabee	*Keene	D. P. McFarlane	Keene.
	Otonabee Union	George Stewart, Sec	Peterborough.
	Shearer	John Miller, Sec	Lang.
Smith	Central Smith	James Tindle, Sec	Peterborough.
	Cherry Grove	P. Robinson, Sec	Bridgenorth.
	Lakefield	J. W. Moore, Prop	Lakefield.
	Missing Link	James Middleton, Sec	Peterborough.
	North Smith	M. E. Sanderson, Pres	Selwyn.
HALIBURTON:			
Cardiff	Deer Lake	Alfred W. Willis, Sec	Deer Lake.
Minden	Minden	M. Brown, Sec	Minden.
Monmouth	Monmouth	W. W. Ames, Prop	Wilberforce.

CHEESE FACTORIES IN ONTARIO.—*Continued.*

County and Township.	Name of Factory.	Name of Secretary or other Officer.	Post Office Address.
HASTINGS:			
Carlow and Mayo	Carlow	Andrew Whyte, Sec	Boulter.
	Carlow and Mayo Union	W. J. Douglas, Pres	do
Dungannon	Bancroft	Fred. Mullett, Pres	Bancroft.
	L'Amable	J. R. Tait, Sec	L'Amable.
	Walkerville	D. Kavanagh, Pres	Umfraville.
Elzevir	Elzevir	Wm. Wiggins	Queensborough.
Herschel	Maynooth	John M. Third, Sec	Maynooth.
Hungerford	Bogart, Kervine	Patrick Murphy, Pres	Stoco.
	*Cedar	Andrew Kirk	Chapman.
	Marlbank	Wm. Burley	Marlbank.
	Moneymore	John Thompson, Sec	Moneymore.
	Roblin	James Clare, Pres	Chapman.
	Thomasburg	E. Elliott, Sec	Thomasburg.
	Tweed	Thomas Graham, Pres	Tweed.
	*Victoria	Robert Gordon	do
Huntingdon	Emeline	John O'Reilly	Madoc.
	Glen, West Huntingdon	James Haggerty, Pres	West Huntingdon
	*Ivanhoe	J. B. Fox, Pres	Ivanhoe.
	Moira	J. G. Foster, Pres	Moira.
	White Lake	Hector Wood	Ivanhoe.
Madoc	*Allen Settlement	W. J. Allen	Cooper.
	Alexandria	John Caskey, Pres	Madoc.
	Brook Valley	Richard Farrell, Pres	do
	Cold Spring	A. M. Ketcheson, Pres	do
	Golden	James English, Pres	do
	Spring Creek	Wm. Thompson, Pres	Remington.
	Spring Hill	D. McKenzie	Madoc.
Marmora	Deloro	Ralph Laycock, Pres	Deloro.
	*Marmora	Wm. Hilton	Marmora.
Monteagle	Greenview	Mrs. Edward Leveck	Greenview.
	Hybla	George A. Bartlett, Pres	Hybla.
Rawdon	Diamond, Stirling	Hiram Conley, Pres	Stirling.
	Enterprise	James W. Butler, Pres	Sine.
	Harold	John Tanner, Pres	Harold.
	Maple Leaf	Wm. Meiklejohn, Pres	Big Springs.
	Plum Grove	Thomas Walker, Pres	Wellman'sCorners
	*Ridge Road	Wm. Rodgers	Stirling.
	*Springbrook	Thomas J. Thompson, Pres	Springbrook.
Sidney	*Eclipse	James Bird	Stirling.
	Frankford	Joshua Anderson	Frankford.
	*Front of Sidney	Hon. Robert Read	Belleville.
	Grove	A. B. Mallory, Pres	Frankford.
	Johnstown	E. Harvey, Sec	Glen Miller.
	Shamrock	Oakley Vandervoort, Pres	Stirling.
	Sidney	J. R. Brower, P'res	Belleville.
	*Sidney Town Hall	S. T. Wilmott, Pres	Wallbridge.
	Springfield	W. H. Knox, Pres	Trenton.
Thurlow	Ashley	Harford Ashley	Belleville.
	Bronte	James Boldrick, Pres	Canifton.
	East Hastings	W. A. Chapman, Sec	Roslin.
	Halloway	P. R. Daly, Pres	Foxboro'.
	Thurlow	O. R. Weese, Pres	Belleville.
	Union	F. Brenton, Pres	Corbyville.
	Zion	G. M. Caldwell, Pres	Foxboro'.
Tyendinaga	Albert	Michael Corrigan, Pres	Albert.
	Empey Hill	Peter Gould, Sec	Napanee.
	Melrose	A. J. McLaren	Melrose.
	Mountain	R. L. Lazier, Pres	Shannonville.
	*Read	Patrick Boland	Naphan.
	Roselnd	Alex. Coulter, Sec	Myrehall.
	*Shannonville	J. K. McCargar	Belleville.

CREAMERIES IN ONTARIO IN 1889.

County and Township.	Name of Creamery.	Name of Secretary or other Officer.	Post Office Address.
ESSEX :			
Mersea	Leamington	Sloan & Bruner, Props.	Leamington.
KENT :			
Raleigh	Cedar Springs.	Taylor & Williamson	Cedar Springs.
LAMBTON :			
Plympton	Wanstead	Arch. Wark	Wanstead.
HURON :			
Goderich	Mount Pleasant	Herbert Elford, Sec.	Holmesville
Hullett	Londesborough	George Watt, Pres.	Londesborough.
McKillop	Seaforth	John Hannah, Prop.	Seaforth.
Tuckersmith	*Brucefield	Hugh McCartney	Brucefield.
BRUCE :			
Brant	Walkerton (Brills)	George Bothwell, Mgr.	Walkerton.
Carrick	*Deemerton	D. Schmidt	Deemerton.
Culross	Formosa	Sebastian Gfroerer	Formosa.
	Teeswater	S. R. Brill, Sec.	Teeswater.
Elderslie	Chesley	Isaac Wenger, Prop	Ayton.
	Dobbinton	T. H. Rolston	Dobbinton.
Kinloss	Kinloss	A. H. Musgrove, Sec	Whitechurch.
GREY :			
Egremont	Dromore	John Philp	Dromore.
	Holstein	David Allan, Sec	Holstein.
Glenelg	Durham	A. Davidson, Sec.	Durham.
Normanby	Ayton	Isaac Wenger, Prop.	Ayton.
	Saugeen Valley	John B. Ashley, Sec.	Neustadt.
Sydenham	Pleasant View	James Struthers, Prop.	Owen Sound.
PERTH :			
Blanshard	Kirkton	John Hannah, Prop.	Seaforth.
Easthope N	Silver Creek	George Wettlaufer, Sec	Amulree.
WELLINGTON :			
Guelph	Agricultural College	President of College.	Guelph.
WATERLOO :			
Wilmot	†Nith Valley	Henry D. Tye, Sec.	Haysville.
Woolwich	St. Jacobs	Isaac Hilborn. Sec.	Elmira.
YORK :			
Markham	Jerseyhurst	Robert Reesor, Prop.	Cedar Grove.
DURHAM :			
Cartwright	Cedar Grove	Robert Philp	Cadmus.
PRINCE EDWARD :			
Ameliasburg	†Sprague	John Sprague	Ameliasburg.
LEEDS & GRENVILLE :			
Edwardsburg	Ventnor	Millar & Ferguson, Prop	Spencerville.
DUNDAS :			
Matilda	Banford & Johnston	James Dillon	Hainsville.
	*Rutherford	W. D. Rutherford	Iroquois.
STORMONT :			
Osnabruck	†Stormont	John H. Croil.	Aultsville.
GLENGARRY :			
Charlottenburg	Gore	Wm. Abrams	Cameron town.

† Makes both butter and cheese.

STATISTICS OF

LIVE STOCK AND DAIRY PRODUCTS.

HORSES AND CATTLE.

TABLE No. I.—Showing by County Municipalities and groups of Counties the number of Horses and Cattle (Milch Cows specified) in Ontario in 1888 and 1889.

Counties.	Horses.		Cattle.					
			Milch cows.		All other cattle.		Totals.	
	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.
Essex	15,744	15,197	13,760	13,411	23,622	23,204	37,382	36,615
Kent	20,033	19,115	18,699	18,755	38,948	38,601	57,647	57,356
Elgin	15,121	14,610	18,166	17,586	29,251	29,310	47,417	46,896
Norfolk	12,896	12,247	15,969	16,196	17,110	17,879	33,079	34,075
Haldimand	11,230	10,871	12,110	12,575	16,697	17,915	28,807	30,490
Welland	9,951	9,441	8,890	8,917	11,179	11,982	20,069	20,899
Totals	84,975	81,481	87,594	87,440	136,807	138,891	224,401	226,331
Lambton	15,638	14,908	17,573	17,416	42,362	41,048	59,935	58,464
Huron	29,439	28,010	30,256	30,717	77,278	76,211	107,534	106,928
Bruce	21,673	20,180	27,748	27,610	55,719	56,856	83,467	84,466
Totals	66,750	63,098	75,577	75,743	175,359	174,115	250,936	249,858
Grey	26,993	25,610	34,308	33,801	67,871	70,260	102,179	104,061
Simcoe	25,862	24,630	24,811	24,206	45,537	46,753	70,348	70,959
Totals	52,855	50,240	59,119	58,007	113,408	117,013	172,527	175,020
Middlesex	29,399	28,214	36,396	35,267	68,643	69,972	105,039	105,239
Oxford	19,480	18,087	34,775	33,534	32,827	32,696	67,602	66,230
Brant	10,438	10,075	10,415	9,976	13,384	13,713	23,799	23,689
Perth	20,410	19,383	26,178	25,842	50,065	50,571	76,243	76,413
Wellington	23,024	22,267	26,107	26,029	52,893	53,427	79,000	79,456
Waterloo	12,916	12,528	14,755	14,423	21,417	21,546	36,172	35,969
Dufferin	8,658	8,447	9,629	9,876	20,423	21,566	30,052	31,442
Totals	124,325	119,001	158,255	154,947	259,652	263,491	417,907	418,438
Lincoln	9,232	9,096	8,620	8,914	10,293	10,881	18,913	19,795
Wentworth	13,224	12,715	13,534	13,153	15,998	16,929	29,532	30,082
Halton	8,582	8,332	9,599	9,999	15,981	16,340	25,580	26,339
Peel	12,924	12,771	12,538	12,939	16,634	18,299	29,172	31,238
York	25,390	24,771	20,973	20,869	25,792	26,265	46,765	47,134
Ontario	19,089	18,426	16,320	16,304	32,612	33,042	48,932	49,346
Durham	14,802	14,385	12,326	12,450	22,199	22,560	34,525	35,010
Northumberland	17,114	16,618	21,191	21,023	21,726	22,514	42,917	43,537
Prince Edward	11,194	10,815	8,901	9,781	7,977	8,495	16,878	18,276
Totals	131,551	127,929	124,002	125,432	169,212	175,325	293,214	300,757
Lennox and Addington	9,649	9,786	12,680	14,279	13,209	16,050	25,889	30,329
Frontenac	9,065	9,542	15,505	17,039	14,370	16,807	29,875	33,846
Leeds and Grenville	19,418	19,437	45,401	47,048	26,439	30,995	71,840	78,043
Dundas	8,066	8,026	17,841	17,188	10,641	10,891	28,482	28,079
Stormont	7,473	7,186	15,471	15,471	8,615	8,615	24,086	24,086
Glengarry	9,195	8,538	18,375	18,655	11,726	11,905	30,101	30,560
Prescott	7,648	7,004	13,027	12,586	8,862	8,942	21,889	21,528
Russell	4,816	4,447	5,925	6,077	7,039	7,610	12,964	13,687
Carleton	14,257	13,722	23,587	23,946	23,262	25,395	46,849	49,341
Renfrew	11,663	11,423	16,823	17,184	23,707	25,355	40,530	42,539
Lanark	10,000	10,050	18,553	18,721	22,980	24,897	41,533	43,618
Totals	111,250	109,161	203,188	208,194	170,850	187,462	374,038	395,656
Victoria	12,565	12,295	12,297	12,248	23,841	24,328	36,138	36,576
Peterborough	10,277	9,978	14,728	14,327	19,092	19,744	33,820	34,071
Haliburton	1,055	987	2,405	2,231	3,753	3,581	6,158	5,812
Hastings	18,238	17,503	33,379	34,482	23,433	25,950	56,812	60,432
Totals	42,135	40,763	62,809	63,288	70,119	73,603	132,928	136,891
Muskoka	2,452	2,264	4,511	4,529	8,273	8,425	12,784	12,954
Parry Sound	995	873	1,918	1,841	3,797	3,715	5,715	5,556
Algoma	1,507	1,408	2,198	2,138	5,251	5,039	7,449	7,177
Totals	4,954	4,545	8,627	8,508	17,321	17,179	25,948	25,687
The Province	618,795	596,218	779,171	781,559	1,112,728	1,147,079	1,891,899	1,928,638

SHEEP, HOGS AND POULTRY.

TABLE No. II.—Showing by County Municipalities and groups of Counties the number of Sheep, Hogs and Poultry in Ontario in 1888 and 1889.

Counties.	Sheep and Lambs.		Hogs.		Poultry.	
	1889	1888	1889	1888	1889	1888
Essex	22,082	21,885	55,724	51,596	179,019	179,558
Kent	27,711	28,451	59,422	55,225	191,205	189,312
Elgin	32,025	31,428	34,660	32,822	169,473	164,537
Norfolk	22,182	22,006	26,643	25,423	134,151	131,135
Haldimand	22,137	23,351	13,264	13,120	112,801	106,316
Welland	19,901	20,307	7,302	7,998	92,903	90,726
Totals	146,038	147,428	197,015	186,184	879,552	861,584
Lambton	34,042	33,244	17,972	18,433	162,255	159,543
Huron	65,570	64,921	30,679	29,246	334,126	328,218
Bruce	73,044	69,105	24,445	23,664	230,888	225,037
Totals	172,656	167,270	73,096	71,343	727,269	712,798
Grey	104,116	100,304	33,495	33,502	293,582	288,675
Simcoe	63,831	63,640	40,609	39,350	263,704	259,807
Totals	167,947	163,944	74,104	72,852	557,286	548,482
Middlesex	48,151	47,393	39,863	39,468	355,736	333,398
Oxford	24,717	25,351	31,021	29,943	198,031	193,013
Brant	16,710	16,913	14,108	13,592	89,124	86,027
Perth	45,630	44,648	25,364	23,121	228,859	227,494
Wellington	67,516	65,170	32,556	31,214	244,306	238,115
Waterloo	29,041	29,816	15,041	14,996	127,087	125,209
Dufferin	26,075	25,464	13,491	13,073	98,928	100,741
Totals	257,840	254,755	171,444	165,407	1,342,071	1,303,997
Lincoln	15,080	15,725	9,659	9,927	73,167	72,371
Wentworth	20,261	21,216	13,671	14,300	101,967	98,710
Halton	16,495	16,595	8,342	8,989	78,216	76,984
Peel	20,697	21,098	18,240	18,350	118,213	121,120
York	34,225	37,693	37,913	36,385	218,829	213,909
Ontario	39,320	39,557	24,756	24,294	177,111	173,809
Durham	28,419	29,208	14,035	14,177	138,657	135,672
Northumberland	28,163	29,834	16,712	17,088	145,435	142,304
Prince Edward	11,815	12,437	4,905	4,781	79,135	78,119
Totals	214,475	223,363	148,233	148,291	1,130,730	1,112,998
Lennox and Addington	14,360	15,991	7,733	7,972	81,882	81,800
Frontenac	19,880	22,040	7,732	8,029	74,069	74,742
Leeds and Grenville	42,701	44,996	18,995	19,110	213,159	208,570
Dundas	11,799	12,102	9,154	8,476	111,628	106,312
Stormont	12,203	12,339	6,765	6,938	88,469	84,659
Glengarry	17,254	18,105	7,355	8,491	103,222	95,753
Prescott	17,052	16,302	8,863	8,971	63,063	57,750
Russell	7,761	8,204	4,669	5,026	41,661	41,997
Carleton	37,632	38,166	15,791	16,015	163,239	160,510
Renfrew	55,036	54,276	15,364	15,988	114,794	112,433
Lanark	40,227	40,716	13,224	13,371	115,275	114,701
Totals	275,905	283,237	115,645	118,387	1,170,461	1,139,227
Victoria	27,947	28,546	14,352	14,750	131,009	129,456
Peterborough	22,360	22,700	13,971	14,344	133,204	128,949
Haliburton	4,579	4,361	1,434	1,477	11,973	11,949
Hastings	34,198	35,438	18,654	18,842	154,238	151,809
Totals	89,084	91,045	48,411	49,413	430,424	422,163
Muskoka	9,724	8,522	2,824	2,721	30,208	29,300
Parry Sound	3,436	3,129	1,686	1,651	13,845	13,061
Algoma	7,075	6,351	3,011	2,830	22,452	20,504
Totals	20,235	18,002	7,521	7,202	66,505	62,865
The Province	1,344,180	1,349,044	835,469	819,079	6,304,298	6,164,114

RATIOS OF LIVE STOCK.

TABLE No. III.—Showing by County Municipalities and groups of Counties the number of Live Stock in Ontario in the years 1888 and 1889 per 1,000 acres of cleared land.

Counties.	Horses and Colts.		Cattle.		Sheep and Lambs.		Hogs.		Poultry.	
	1889	1888	1889	1888	1889	1888	1889	1888	1889	1888
Essex	77.6	78.1	184.2	188.1	108.8	112.4	274.5	265.0	881.9	922.3
Kent	68.0	67.4	195.7	202.4	94.1	100.4	201.8	194.9	649.3	668.0
Elgin	55.2	54.2	173.2	173.9	117.0	116.5	126.6	121.7	619.1	610.1
Norfolk	55.7	54.0	142.9	150.1	95.8	96.9	115.1	112.0	579.7	577.7
Haldimand	55.7	54.7	142.8	153.5	109.7	117.6	65.8	66.1	559.2	535.2
Welland	61.3	58.6	123.6	129.8	122.6	126.1	45.0	49.7	572.1	563.4
Group	62.2	61.1	164.2	169.6	106.8	110.5	144.1	139.5	643.5	645.6
Lambton	52.9	52.8	202.9	207.1	115.2	117.8	60.8	65.3	549.3	565.1
Huron	53.1	52.1	194.0	199.0	118.3	120.8	55.4	54.4	602.9	610.8
Bruce	47.9	46.0	184.6	192.6	161.5	157.5	54.1	53.9	510.6	513.0
Group	51.3	50.1	192.8	198.6	132.6	132.9	56.2	56.7	558.7	566.5
Grey	48.9	47.1	185.2	191.4	188.7	184.5	60.7	61.6	532.2	531.0
Simcoe	54.4	53.0	147.9	152.6	134.2	136.9	85.4	84.6	554.6	558.9
Group	51.5	49.8	168.0	173.5	163.5	162.6	72.1	72.2	542.6	543.9
Middlesex	55.7	54.0	198.9	201.4	91.2	90.7	75.5	75.5	673.6	637.9
Oxford	56.7	53.4	196.8	195.4	71.9	74.8	90.3	88.4	576.4	569.6
Brant	60.5	59.6	137.9	140.2	96.8	100.1	81.8	80.5	516.5	509.2
Perth	56.1	54.4	209.6	214.3	125.4	125.2	69.7	64.8	629.1	638.0
Wellington	52.2	51.2	179.3	182.8	153.2	150.0	73.9	71.8	554.4	547.9
Waterloo	55.0	54.2	153.9	155.6	123.6	129.0	76.0	64.9	540.8	541.8
Dufferin	46.1	46.4	159.9	172.8	138.7	140.0	71.8	71.9	526.3	553.8
Group	54.7	53.3	184.0	187.2	113.5	114.0	75.5	74.0	590.8	583.5
Lincoln	62.6	61.1	128.2	133.0	102.2	105.6	65.5	66.7	495.9	486.1
Wentworth	63.7	61.7	142.3	146.0	97.6	103.0	65.9	69.4	491.3	479.1
Halton	51.9	50.6	154.7	159.9	99.7	100.7	50.4	54.6	472.9	467.2
Peel	54.2	53.2	122.4	130.1	86.9	87.9	76.5	76.4	496.1	504.4
York	62.3	60.6	114.7	115.3	84.0	92.2	93.0	89.0	536.9	523.2
Ontario	56.9	55.0	145.9	147.3	117.2	118.1	73.8	72.5	528.0	518.9
Durham	54.1	50.7	126.2	123.4	103.9	103.0	51.3	50.0	507.0	478.2
Northumberland	54.5	53.5	136.7	140.1	89.7	96.0	53.2	55.0	463.2	457.8
Prince Edward	61.7	59.1	93.0	99.9	65.1	68.0	27.0	26.1	436.1	427.1
Group	57.9	56.1	129.1	131.8	94.4	97.9	65.3	65.0	497.9	487.9
Lennox and Addington	46.8	48.7	125.5	150.9	69.6	79.5	37.5	39.7	396.9	406.9
Frontenac	42.3	45.1	139.3	160.1	92.7	104.2	36.1	38.0	345.5	353.5
Leeds and Grenville	46.5	47.1	172.2	189.3	102.4	109.1	45.5	46.4	511.0	505.2
Dundas	60.1	60.4	212.3	211.3	87.9	91.1	68.2	63.8	832.0	799.9
Stormont	64.5	61.9	208.0	207.5	105.4	106.3	58.4	59.8	764.1	729.5
Glengarry	62.8	60.2	205.7	215.3	117.9	127.5	50.3	59.8	705.4	674.6
Prescott	55.8	54.0	159.6	166.0	124.4	125.7	64.6	69.2	459.9	445.4
Russell	63.7	59.0	171.6	181.4	102.7	108.8	61.8	66.6	551.5	556.8
Carleton	49.9	49.8	163.8	178.9	131.6	138.4	55.2	58.1	570.9	582.1
Renfrew	44.4	44.0	154.4	163.8	209.6	208.9	58.5	61.5	437.2	432.8
Lanark	34.6	34.7	143.7	150.6	139.1	140.6	45.7	46.2	398.7	396.0
Group	48.7	48.6	163.7	176.2	120.8	126.1	50.6	52.7	512.4	507.2
Victoria	52.7	51.4	151.7	153.0	117.3	119.4	60.2	61.7	549.8	545.1
Peterborough	46.4	40.4	152.5	158.4	100.8	105.5	63.0	66.7	600.8	599.5
Haliburton	35.5	35.2	207.4	207.5	154.2	155.7	48.3	52.7	403.2	426.6
Hastings	54.5	50.8	169.7	175.4	102.2	102.9	55.7	54.7	460.8	440.7
Group	51.1	49.3	161.2	165.6	108.1	110.1	58.7	59.8	522.1	510.7
Muskoka	46.5	43.5	242.6	248.8	184.6	163.7	51.6	52.3	573.4	562.7
Parry Sound	29.5	29.5	169.4	187.4	101.9	105.6	50.0	55.7	410.5	440.6
Algoma	36.8	38.9	181.8	198.3	172.7	175.5	73.5	78.2	548.0	566.7
Group	38.9	38.6	203.7	217.9	158.9	152.7	59.0	61.1	522.1	533.2
The Province	53.9	52.7	164.9	170.6	117.1	119.3	72.8	72.4	549.4	541.5

WOOL.

TABLE No. IV.—Showing by County Municipalities and groups of Counties the clip of Wool in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9; also the average number of pounds per fleece.

Counties.	1889.			1888.			Yearly average for the eight years 1882-9.		
	No. of fleeces.	Pounds.	Lb. per fleece.	No. of fleeces.	Pounds.	Lb. per fleece.	No. of fleeces.	Pounds.	Lb. per fleece.
Essex	12,874	76,729	5.96	12,966	77,155	5.95	14,372	80,763	5.62
Kent	16,682	99,091	5.94	17,119	101,943	5.95	20,654	117,547	5.69
Elgin	18,062	108,733	6.02	18,400	114,325	6.21	22,650	128,860	5.69
Norfolk	12,511	66,684	5.33	12,731	68,005	5.34	17,106	89,887	5.25
Haldimand	12,507	74,792	5.98	13,308	78,912	5.93	18,325	108,143	5.90
Welland	11,881	59,167	4.98	12,554	62,665	4.99	14,508	73,304	5.05
Totals	84,517	485,196	5.74	87,078	503,005	5.78	107,615	598,504	5.56
Lambton	19,676	118,056	6.00	19,503	116,389	5.97	25,351	147,258	5.81
Huron	39,342	226,217	5.75	40,093	229,079	5.71	49,292	278,651	5.61
Bruce	45,799	271,130	5.92	44,744	254,229	5.68	48,370	273,999	5.66
Totals	104,817	615,403	5.87	104,340	599,697	5.75	123,013	699,908	5.69
Grey	63,407	360,152	5.68	62,976	351,070	5.57	70,163	385,421	5.49
Simcoe	40,852	227,954	5.58	41,492	229,838	5.54	46,017	252,445	5.49
Totals	104,259	588,106	5.64	104,468	580,908	5.56	116,180	637,866	5.49
Middlesex	28,361	171,868	6.06	28,334	172,485	6.09	38,214	226,048	5.92
Oxford	14,212	81,577	5.74	14,963	84,915	5.67	20,801	118,609	5.70
Brant	9,592	56,593	5.90	9,883	57,341	5.80	14,584	83,247	5.71
Perth	26,420	149,273	5.65	26,398	148,395	5.62	34,006	185,267	5.66
Wellington	41,725	235,746	5.65	42,261	236,447	5.59	48,776	275,375	5.65
Waterloo	18,122	96,047	5.30	19,154	100,835	5.26	22,871	122,835	5.37
Dufferin	16,505	91,438	5.54	16,292	90,236	5.54	18,458	102,712	5.57
Totals	154,937	882,542	5.70	157,285	890,654	5.66	196,750	1,114,093	5.66
Lincoln	8,626	42,095	4.88	9,145	44,895	4.91	10,683	54,535	5.10
Wentworth	11,468	66,400	5.79	12,771	74,922	5.87	15,393	86,817	5.64
Halton	9,716	57,033	5.87	9,936	59,662	6.00	12,144	74,633	6.15
Peel	13,287	84,540	6.36	13,925	88,502	6.36	16,165	104,997	6.50
York	20,638	122,540	5.94	23,595	140,370	5.95	28,480	169,837	5.96
Ontario	25,867	144,395	6.05	24,400	144,754	5.93	27,841	169,995	6.10
Durham	17,705	102,680	5.80	18,814	107,249	5.70	21,637	124,872	5.77
Northumberland	16,785	98,696	5.88	18,193	106,403	5.85	21,382	121,701	5.69
Prince Edward	7,325	37,431	5.11	8,243	41,148	4.99	9,949	52,141	5.24
Totals	129,417	755,834	5.84	139,022	807,905	5.81	163,674	959,528	5.86
Lennox and Addington	9,277	51,395	5.54	10,862	60,262	5.55	15,591	81,434	5.22
Frontenac	12,067	65,524	5.43	13,660	71,810	5.26	19,120	95,308	4.98
Leeds and Grenville	27,030	129,744	4.80	28,960	138,113	4.77	38,622	186,435	4.83
Dundas	7,752	39,303	5.07	8,277	41,951	5.07	11,543	57,217	4.96
Stormont	8,176	44,222	5.41	8,799	46,776	5.32	10,309	52,919	5.18
Glengarry	11,974	56,547	4.72	12,559	59,199	4.71	16,174	74,971	4.64
Prescott	10,231	52,792	5.16	9,987	51,001	5.11	11,273	54,602	4.84
Russell	5,697	27,004	4.74	5,982	28,720	4.80	8,093	38,334	4.74
Carleton	24,611	129,208	5.25	25,792	133,135	5.16	29,964	150,711	5.03
Renfrew	36,214	172,741	4.77	36,684	171,504	4.68	37,497	168,419	4.49
Lanark	25,745	125,893	4.89	26,550	128,086	4.82	33,877	161,783	4.78
Totals	178,774	894,353	5.00	188,112	930,557	4.95	232,063	1,122,133	4.84
Victoria	17,942	97,784	5.45	18,859	105,059	5.57	22,214	122,662	5.52
Peterborough	13,930	73,968	5.31	14,630	77,291	5.28	17,439	91,675	5.26
Haliburton	3,118	15,871	5.09	3,018	14,780	4.90	3,406	16,135	4.74
Hastings	21,271	103,802	4.88	22,830	113,794	4.98	26,946	130,867	4.86
Totals	56,261	291,425	5.18	59,337	310,924	5.24	70,005	361,339	5.16
Muskoka	6,184	34,198	5.53	5,654	30,453	5.39	5,864	31,523	5.38
Parry Sound	2,519	15,265	6.06	2,329	13,630	5.85	2,046	11,847	5.79
Algoma	4,245	26,574	6.26	3,897	23,294	5.98	3,068	18,187	5.93
Totals	12,948	76,037	5.87	11,880	67,377	5.67	10,978	61,557	5.61
The Province	825,930	4,588,896	5.56	851,522	4,691,027	5.51	1,020,278	5,554,928	5.44

FACTORY CHEESE.

TABLE No. V.—Showing by County Municipalities and groups of Counties the quantity and value of cheese made at 577 factories in Ontario in 1889, the average dates of opening and closing, and the total number of factories reported in operation.

Counties.	Factories.		Quantity of—		Value of cheese.	No. of patrons.	Average No. of cows.	Average date of—	
	No. in operation.	No. of returns.	Milk used.	Cheese made.				Opening	Closing.
			lb	lb	$				
Essex	1	1	602,149	56,481	5,263	88	180	May 1	Sep. 14
Kent	13	8	5,008,439	456,284	42,211	479	2,239	" 21	Oct. 16
Elgin	26	23	26,440,414	2,484,084	224,197	1,540	8,990	April 30	Nov. 12
Norfolk	22	17	14,310,722	1,344,418	124,384	1,175	5,403	May 6	" 1
Haldimand	11	10	7,002,197	655,927	60,113	698	2,955	" 16	Oct. 22
Welland	3	3	2,126,986	198,425	17,652	209	925	" 18	" 29
Total	76	62	55,490,907	5,195,619	473,820	4,189	20,692	May 8	Nov. 2
Lambton	15	12	11,288,417	1,041,943	95,624	1,041	4,437	May 12	Oct. 23
Huron	16	16	17,179,857	1,582,006	150,673	1,357	6,491	" 17	" 19
Bruce	21	20	20,016,951	1,947,851	176,118	1,572	7,952	" 18	" 21
Total	52	48	48,485,225	4,571,800	422,415	3,970	18,880	May 16	Oct. 21
Grey	11	9	6,593,909	627,157	57,995	489	2,493	May 18	Oct. 17
Simcoe	5	5	2,183,932	207,892	18,407	208	958	" 24	" 9
Total	16	14	8,777,841	835,049	76,402	697	3,451	May 10	Oct. 14
Middlesex	41	36	49,812,757	4,623,409	437,227	2,772	16,488	May 1	Nov. 8
Oxford	40	34	75,509,992	7,135,812	661,758	2,642	22,193	April 20	" 18
Brant	6	3	3,950,366	376,397	34,573	219	1,503	" 29	" 14
Perth	24	22	29,059,089	2,705,649	259,665	1,659	10,352	May 8	Oct. 30
Wellington	11	11	10,781,982	1,000,251	94,732	783	4,390	" 20	" 19
Waterloo	6	4	3,271,343	302,935	29,249	247	1,376	" 18	" 24
Dufferin	2	2	764,703	72,806	6,567	66	356	" 23	" 2
Total	130	112	173,150,232	16,217,259	1,523,771	8,388	56,658	May 2	Nov. 8
Lincoln	4	3	2,080,514	193,999	17,847	234	813	May 11	Oct. 23
Wentworth	3	2	2,675,998	254,545	23,729	167	1,150	" 4	Nov. 8
Peel	1	1	265,000	24,720	2,500	20	100	" 15	Sep. 30
York	3	3	616,120	58,348	5,959	58	322	" 31	" 25
Ontario	1	1	287,685	26,000	2,604	39	125	" 21	Oct. 14
Durham	5	5	2,476,204	233,843	21,759	206	969	" 15	" 24
Northumberland	36	32	25,376,840	2,433,370	230,265	1,450	8,813	" 2	Nov. 3
Prince Edward	16	12	9,055,183	872,021	79,214	829	3,390	" 4	Oct. 19
Total	69	59	42,833,544	4,096,846	383,877	3,003	15,682	May 6	Oct. 28
Lennox and Addington	19	16	18,966,693	1,876,123	176,987	1,301	7,145	May 2	Oct. 31
Frontenac	37	28	16,523,326	1,626,478	150,103	801	6,144	" 7	" 29
Leeds and Grenville	104	69	66,574,518	6,428,959	600,196	2,664	28,570	April 27	" 31
Dundas	37	19	14,073,039	1,382,133	132,220	621	5,597	" 30	" 31
Stormont	23	13	10,392,770	1,019,129	93,914	581	4,115	May 4	" 27
Glengarry	45	7	3,402,052	341,603	31,425	194	1,563	" 1	" 29
Prescott	32	14	6,926,339	682,279	62,391	415	2,898	" 4	" 24
Russell	6	6	1,932,505	184,469	16,995	142	934	" 10	" 10
Carleton	17	11	6,728,580	645,525	59,249	415	2,992	" 15	" 19
Renfrew	3	3	1,047,698	101,072	9,432	90	510	" 16	" 7
Lanark	23	18	15,220,823	1,473,484	137,272	915	6,150	" 7	" 20
Total	346	204	161,788,343	15,761,254	1,470,184	8,139	61,618	May 2	Oct. 29
Victoria	8	7	3,953,068	379,677	36,012	294	1,523	May 13	Oct. 28
Peterborough	20	16	14,665,051	1,392,709	132,517	756	5,071	" 5	" 31
Haliburton	3	3	618,789	61,045	5,630	50	247	" 8	" 25
Hastings	64	52	49,681,427	4,914,855	470,852	2,319	17,268	April 30	Nov. 1
Total	95	78	68,918,335	6,748,286	645,011	3,419	24,109	May 2	Oct. 31
The Province	784	577	559,444,427	53,426,113	4,995,480	31,805	201,090	May 4	Oct. 30
*Later returns:									
Leeds and Grenville,	....	1	971,218	92,497	8,657	40	400	May 1	Oct. 31
Dundas	....	1	1,345,375	130,007	12,281	90	525	" 1	Nov. 5
Stormont	....	4	1,749,382	168,506	13,036	113	.....	" 10	Oct. 21
Glengarry	....	27	13,505,168	1,315,639	102,262	764	.....	" 10	" 26

*Received too late for estimates compiled in introductory matter.

FACTORY CHEESE.

TABLE No. VI.—Showing by County Municipalities and groups of Counties the average per factory of days in operation, of the quantity and value of cheese made, of number of patrons, of average number of cows, and yield of milk and value of product per cow, computed from the aggregate of 557 factories returned for the year 1889.

Counties.	Av. No. of days in operation.	Quantity of—		Value of cheese.	No. of patrons.	Av. No. of cows.	Average per cow.				Milk required to make 1 lb. cheese.	Value of cheese per 100 lb.	Value of product of 100 lb. milk.
							Yield of milk—		Value of product.				
		Milk used.	Cheese made.				Per season.	Per day.	Per season.	Per day.			
		lb.	lb.	$			lb.	lb.	$ c.	cts.	lb.	$ c.	cts.
Essex	114	602,149	56,481	5,263	88	180	3,345	29.3	29 24	25.6	10.66	9 32	87.4
Kent	131	626,055	57,036	5,276	60	280	2,237	17.1	18.84	14.4	10.98	9 25	84.3
Elgin	170	1,149,583	108.004	9,748	67	391	2,941	17.4	24 94	14.7	10.64	9 03	84.8
Norfolk	153	841,807	79,083	7,317	69	318	2,649	17.3	23 02	15.0	10.64	9 25	86.9
Haldimand	135	700,220	65,593	6,011	70	296	2,370	17.5	20 34	15.0	10.68	9 16	85 8
Welland	137	708,995	66,142	5,8-4	70	308	2.294	16.7	19 08	13.9	10.73	8 90	83.0
	154	895,015	83,800	7,642	68	334	2.682	17.4	22 90	14.9	10.68	9 12	85.4
Lambton	142	940,701	86,829	7,969	87	370	2,544	17.9	21 55	15.1	10.83	9 18	84.7
Huron	133	1,073,741	98,875	9,417	85	406	2,647	19.9	23 21	17.5	10.86	9 52	87.7
Bruce	135	1,000,848	97,393	8,806	79	398	2,517	18.6	22 15	16.3	10.28	9 04	88.0
	136	1,010,109	95,246	8,800	83	393	2,568	18.9	22 37	16.4	10.61	9 24	87.1
Grey	135	732,657	69,684	6,444	54	277	2.645	19.7	23 26	17.3	10.51	9 25	88.0
Simcoe	118	436,786	41,578	3,681	42	192	2,280	19.4	19 21	16.3	10.51	8 85	84.3
	130	626,989	59,646	5,457	50	247	2,544	19.6	22 14	17.0	10.51	9 15	87.0
Middlesex	165	1,383,688	128,428	12,145	77	458	3,021	18.3	26 52	16.1	10.77	9 46	87.8
Oxford	181	2,220,882	209,877	19,463	78	653	3,402	18.8	29 82	16.5	10.59	9 27	87.6
Brant	177	1,316,789	125,466	11,524	73	501	2,628	14.9	23 00	13.0	10 50	9 19	87.5
Perth	148	1,320,868	122,984	11,803	75	471	2,807	19.0	25.08	17.0	10.74	9 60	89.4
Wellington	131	980,180	90,932	8,612	71	399	2,456	18.8	21 58	16.5	10.78	9 47	87.9
Waterloo	135	817,836	75,734	7,312	62	344	2,377	17.6	21 26	15.8	10.80	9 66	89.4
Dufferin	113	382,352	36,403	3,284	33	178	2,148	19.0	18 45	16.3	10.50	9 02	85.9
	165	1,545,984	144,797	13,695	75	506	3,056	18.6	26 89	16.3	10.68	9 40	88.0
Lincoln	142	693,505	64,666	5,949	78	271	2,559	18.1	21 95	15.5	10.72	9 20	85.8
Wentworth	155	337,999	127,273	11,865	84	575	2,327	15.0	20 63	13.3	10.51	9 32	88.7
Peel	119	265,000	24,720	2,500	20	100	2,650	22.3	25 00	21.0	10.72	10 11	94.3
York	100	205,373	19,449	1,986	19	107	1.913	19.1	18 51	18.5	10.56	10 21	96.7
Ontario	126	287,685	26,000	2,604	39	125	2,301	18.3	20 83	16.5	11.06	10 02	90.5
Durham	138	495,241	46,769	4,352	41	194	2,555	18.6	22 45	16.3	10.59	9 30	87.9
Northumberland	160	793,026	76,043	7,196	45	275	2,879	18.0	26 13	16.3	10.43	9 46	90.7
Prince Edward	146	754,599	72,668	6,601	69	283	2,671	18.3	23 37	16.0	10.38	9 08	87.5
	152	725,992	69,438	6,506	51	266	2,731	17.9	24 48	16.1	10.46	9 37	89.6
Lennox & Add'n	157	1,185,418	117,258	11,062	81	447	2,655	16.9	24 77	15.7	10.11	9 43	93.3
Frontenac	151	590,119	58,089	5,361	29	219	2,689	17.8	24 43	16.2	10.16	9 23	90.8
Leeds & Gren'le.	162	964,848	93,173	8,698	39	342	2,825	17.4	25 46	15.7	10.36	9 34	90.1
Dundas	159	740,686	72,744	6,959	33	295	2,514	15.9	23 62	14.9	10.18	9 57	94.0
Stormont	150	799,444	78,395	7,224	45	317	2,526	16.8	22 82	15.2	10.20	9 22	90.4
Glengarry	156	486,007	48,800	4,489	28	223	2,177	14.0	20 11	12.9	9.96	9 20	92.4
Prescott	149	494,739	48,734	4,457	30	207	2,390	16.0	21 53	14.4	10.15	9 14	90.1
Russell	132	322,084	30,745	2,833	24	156	2,069	15.7	18 20	13.8	10.48	9 21	88.0
Carleton	136	611,689	58,684	5,386	38	272	2,249	16.5	19 80	14.6	10.42	9 18	88.1
Renfrew	125	349,233	33,691	3,144	30	170	2,054	16.5	18 49	14.8	10.37	9 33	90.0
Lanark	142	845,601	81,860	7,626	51	342	2,475	17.4	22 32	15.7	10.33	9 32	90.2
	155	793,080	77,261	7,207	40	302	2,626	17.0	23 86	15.4	10.26	9 33	90.9
Victoria	139	564,724	54,240	5,145	42	218	2,596	18.6	23 65	17.0	10.41	9 48	91.1
Peterborough	155	916,566	87,044	8,282	47	317	2,892	18.7	26 13	16.9	10.53	9 52	90.4
Haliburton	142	206,263	20,348	1,877	17	82	2,505	17.7	22 79	16.1	10.14	9 22	91.0
Hastings	160	955,412	94,516	9,055	45	332	2,877	18.0	27 27	17.0	10.11	9 58	94.8
	157	883,568	86,516	8,269	44	309	2,859	18.2	26 75	17.0	10.21	9 56	93.6
The Province	155	969,574	92,593	8,658	55	349	2.782	17.9	24 84	16.0	10.47	9 35	89.3

FACTORY CHEESE.

TABLE No. VII. - Showing by County Municipalities and groups of Counties, the yearly average per factory of days in operation, of the quantity and value of Cheese made, of number of patrons, of average number of cows, and yield of milk and value of product per cow, computed from an aggregate of 3,158 factories making complete returns in the seven years 1883-9.

Counties.	Avrge No. of days in operation.	Quantity of—		Value of cheese	No. of patrons.	Avr. No. of cows.	Average per cow.				Milk required to make 1lb. cheese.	Value of cheese per 100 lb.	Value of product of 100 lb. milk.
		Milk used.	Cheese made.				Yield of milk		Value of product.				
							Per season	Per day.	Per season	Per day.			
		lb.	lb.	$			lb.	lb.	$ c.	cts.	lb.	$ c.	cts.
Essex	133	478,166	46,496	4,862	55	187	2,557	19.2	26 00	19.6	10.28	10 46	101.7
Kent	142	742,091	69,843	6,763	72	294	2,524	17.8	23 00	16.2	10.63	9 68	91.1
Elgin	168	1,119,704	105,994	10,245	70	375	2,986	17.7	27 31	16.2	10.56	9 67	91.5
Norfolk	159	919,502	88,125	8,355	73	335	2,745	17.3	24 94	15.7	10.43	9 48	90.9
Haldimand	148	827,986	79,181	7,453	75	324	2,556	17.3	23 00	15.6	10.46	9 41	90.9
Welland	132	319,571	30,123	2,756	36	147	2,174	16.5	18 75	14.2	10.61	9 15	86.2
Group	157	887,551	84,394	8,079	69	322	2756	17.5	25 09	16.0	10.52	9 57	91.0
Lambton	146	883,902	83,143	8,017	75	335	2,639	18.1	23 93	16.4	10.63	9 64	90.7
Huron	141	1,212,037	114,359	11,326	99	447	2,711	19.3	25 34	18.0	10 60	9 90	93.4
Bruce	137	987,053	94,440	9,020	80	383	2,577	18.8	23 55	17.2	10.45	9 55	91.4
Group	141	1,019,542	96,574	9,371	84	386	2,641	18.8	24 28	17.2	10.56	9 70	91.9
Grey	133	654,582	62,896	5,923	56	259	2,527	19 0	22 87	17.2	10.41	9 42	90.5
Simcoe	124	409,226	39,610	3,862	43	184	2,224	17.9	20 99	16.9	10.33	9 75	94.4
Group	131	560,769	53,993	5,135	51	230	2,438	18.7	22 33	17.1	10.39	9 51	91.6
Middlesex	167	1,318,953	123,981	12,196	75	432	3,053	18.3	28 23	17.0	10.64	9 84	92.5
Oxford	179	1,864,901	177,554	17,453	72	582	3,204	17.9	29 99	16.8	10.50	9 83	93.6
Brant	168	1,031,131	100,020	9,808	67	373	2,764	16.5	26 29	15.7	10.31	8 81	95.1
Perth	153	1,310,092	123,772	12,292	78	464	2,823	18 5	26 49	17.4	10.58	9 93	93.8
Wellington	140	1,229,972	116,231	11,229	88	457	2,691	19.2	24 57	17.6	10.58	9 66	91.3
Waterloo	136	813,278	76,028	7,563	63	317	2,566	18.8	23 86	17.5	10.70	9 95	93.0
Dufferin	123	564,755	53,436	5,092	49	243	2,324	18.9	20 95	17.0	10.57	9 53	90.2
Group	165	1,422,193	134,674	13,246	74	474	3,000	18.2	27 95	17.0	10.56	9 84	93.1
Lincoln	147	668,476	63,136	5,852	68	245	2,728	18.6	23 89	16.3	10.59	9 27	87.5
Wentworth	158	1,135,576	108,927	10,575	79	425	2,672	16.9	24 88	15.7	10.43	9 71	93.1
Halton	123	102,686	9,868	912	8	45	2,282	18.6	20 27	16.5	10.41	9 24	88.8
Peel	124	616,546	57,766	5,480	45	235	2,624	21.2	23 32	18.9	10.67	9 49	8 89
York	100	193,970	18,411	1,867	21	102	1,902	19.0	18 30	18.3	10.54	10 14	96.3
Ontario	120	269,860	25,490	2,505	35	116	2,326	19.3	21 59	17.9	10.59	9 83	92.8
Durham	140	654,922	62,065	5,757	64	251	2,609	18.6	22 94	16.3	10.55	9 28	87.9
Northumberland	158	819,042	79,753	7,508	50	284	2,884	18.2	26 44	16.7	10 27	9 41	91.7
Prince Edward	148	829,704	81,580	7,494	74	319	2,601	17.5	23 49	15.8	10.17	9 19	90.3
Group	151	746,250	72,375	6,790	56	274	2,724	18.0	24 78	16.4	10.31	9 38	91.0
Lennox & Add'n	155	1,240,154	121,713	11,452	91	477	2,600	16.8	24 01	15.5	10.19	9 41	92.3
Frontenac	149	574,120	56,160	5,237	31	224	2,563	17.2	23 38	15.7	10.22	9 33	91.2
Leeds and Gren'	162	962,282	94,632	9,016	40	352	2,734	16.9	25 61	15.8	10.17	9 53	93.7
Dundas	156	796,753	78,394	7,427	36	316	2,521	16.2	23 50	15.1	10.16	9 47	93.2
Stormont	149	816,708	80,151	7,435	44	330	2,475	16.6	22 53	15.1	9.28	10 19	91.0
Glengarry	155	585,902	57,281	5,804	34	254	2,307	14.9	22 85	14.8	10.23	10 13	99.1
Prescott	147	513,009	51,192	4,721	29	227	2,260	15.4	20 80	14.2	10.02	9 22	92.0
Russell	139	421,680	41,585	4,024	31	194	2,174	15.6	26 74	14.9	10.14	9 68	95.4
Carleton	137	669,979	65,340	6,109	41	299	2,241	16.4	20 43	14.9	10.25	9 35	91.2
Renfrew	126	415,227	41,036	3,946	35	205	2,025	16.0	19 25	15.2	10.12	9 62	95.0
Lanark	145	860,239	85,012	7.914	50	348	2,472	17.0	22 74	15.6	10 12	9 31	92.0
Group	154	808,531	79,482	7,542	42	316	2,559	16.6	23 87	15.4	10.17	9 49	93.3
Victoria	139	511,751	49,813	4,709	41	202	2,533	18.2	23 31	16.8	10.27	9 45	92.0
Peterborough	150	708,883	67,937	6,442	42	255	2,780	18.6	25 26	16.9	10.43	9 48	90.9
Haliburton	135	206,125	20,304	1,880	18	88	2,342	17.4	21 36	15.8	10.15	9 26	91.2
Hastings	162	981,145	98,450	9,332	47	343	2,860	17.6	27 21	16.8	9.97	9 48	95.1
Group	159	874.012	86,869	8,233	45	309	2,829	17.8	26 64	16.8	10.06	9 48	94.2
The Province	156	952.040	91,997	8,837	56	347	2,744	17.6	25 47	16.3	10.35	9 61	92.8

CREAMERY BUTTER.

TABLE No. VIII.—Showing by County Municipalities the quantity and value of Butter made at 30 creameries in Ontario in 1889, and the number of creameries reported in operation.

Counties.	No. reported in operation.	Returns made.		Butter.		Cheese.		Total value of produce.	Average price of butter per lb.	Average date of—	
		Butter only.	Butter and cheese.	Quan.	Value.	Quan.	Value.			Opening	Closing
				lb.	$	lb.	$	$	cts.		
Essex	1	1	....	20,000	5,000	.....	.....	5,000	25.00	May 7	Dec. 31
Kent	1	1	....	5,823	1,275	.....	.....	1,275	21.90	" 20	Aug. 31
Lambton	1	1	....	15,390	3,079	.....	.....	3,079	20.00	" 27	Sept. 30
Huron	4	3	....	58,187	12,293	.....	.....	12,293	21.13	" 21	Oct. 2
Bruce	7	6	....	231,106	48,434	.....	.....	48,434	20.96	" 10	" 18
Grey	6	6	....	265,915	54,083	.....	.....	54,083	20.34	" 19	" 26
Perth	2	2	....	34,396	7,257	.....	.....	7,257	21.10	" 15	" 7
Wellington	1	1	....	13,250	2,915	.....	.....	2,915	22.00	June 3	Sep. 30
Waterloo	2	1	1	64,767	12,876	66,476	4,894	17,770	19.88	May 11	Oct. 27
York	1	1	....	11,520	4,608	.....	.....	4,608	40.00	Jan. 1	Dec. 31
Durham	1	1	....	8,045	1,637	.....	.....	1,637	20.35	May 29	Oct. 7
Prince Edward	1	....	1	16,644	3,836	50,974	3,312	7,148	23.05	" 1	" 31
Leeds & Grenville	1	1	....	35,725	7,730	.....	.....	7,730	21.64	Apr. 25	Nov. 2
Dundas	2	1	....	35,016	6,850	.....	.....	6,850	19.56	" 29	Oct. 30
Stormont	1	....	1	41,134	8,753	102,358	6,200	14,953	21.28	" 20	Nov. 9
Glengarry	1	1	....	19,085	3,441	.....	.....	3,441	18.03	May 1	" 1
The Province. 1889	33	27	3	876,003	184,067	219,808	14,406	198,473	21.01	.....	.....
1888	31	24	3	677,279	137,743	153,247	12,350	150,093	20.34	.....	.....
1887	42	32	3	1,136,576	230,022	131,307	11,617	241,639	20.24	.....	.....
1886	47	27	2	823,853	160,798	96,156	5,529	166,327	19.52	.....	.....
1885	27	11	2	353,347	69,583	126,591	7,785	77,368	19.69	.....	.....
1884	23	5	3	147,924	32,088	259,688	20,786	52,874	21.69	.....	.....
1883	27	9	3	243,902	51,817	134,446	11,218	63,035	21.33	.....	.....

PART III.

VALUES, RENTS AND FARM WAGES.

VALUES OF FARM PROPERTY.

The table following gives the value of farm property by districts for the years 1888 and 1889, under the heads of Land, Buildings and Live Stock, togetherwith the totals for the province in each year since 1882 :

Districts.		Farm land.	Buildings.	Implements.	Live stock.	Total farm property.
		$	$	$	$	$
Lake Erie	1889..	87,865,147	25,039,332	6,876,644	13,457,339	133,238,462
	1888..	87,922,762	24,636,626	6,540,396	13,131,517	132,231,301
Lake Huron	1889..	70,696,974	18,991,619	5,503,309	12,638,402	107,830,304
	1888..	73,145,711	18,718,270	5,336,058	12,300,224	109,500,263
Georgian Bay	1889..	48,930,443	14,759,680	4,529,700	9,221,997	77,441,820
	1888..	49,295,822	14,231,484	4,316,375	8,931,641	76,775,322
West Midland	1889..	136,387,257	42,161,762	10,478,851	22,208,386	211,236,256
	1888..	139,798,683	41,400,140	10,258,573	21,860,521	213,317,917
Lake Ontario	1889..	138,904,264	43,340,883	10,864,907	20,798,891	213,908,945
	1888..	139,895,993	42,471,279	10,451,605	20,473,372	213,292,249
St. Lawrence & Ottawa	1889..	104,077,562	34,727,499	9,496,358	19,099,339	167,400,758
	1888..	104,884,323	33,701,066	9,128,959	18,299,018	166,013,366
East Midland	1889..	40,728,431	12,237,461	3,494,646	7,309,068	63,769,606
	1888..	40,934,983	12,019,842	3,331,576	6,893,434	63,179,835
Northern Districts	1889..	4,739,355	1,206,001	441,291	997,866	7,384,513
	1888..	4,602,524	1,114.519	391,390	949,508	7,057,941
The Province	1889..	632,329,433	192,464,237	51,685,706	105,731,288	982,210,664
	1888..	640,480,801	188,293,226	49,754,832	102,839,235	981,368,094
	1887..	636,883,755	184,753,507	49,248,297	104,406,655	975,292,214
	1886..	648,009,828	183,748,212	50,530,936	107,208,935	989,497,911
	1885..	626,422,024	182,477,905	48,569,725	100,690,086	958,159,740
	1884..	625,478,706	173,386,925	47,830,710	103,106,829	949,803,170
	1883..	654,793,025	163,030,675	43,522,530	100,082,365	961,428,595
	1882..	632,342,500	132,711,575	37,029,815	80,540,720	882,624,610

Taking the figures for the province, an increase is noticed in the values of buildings, implements and live stock, but a considerable decrease (amounting to $8,151,368) is observed in the value of farm land. The total value of farm property for the province is $982,210,664, showing a net increase of $842,570 over the previous year. The Northern Districts alone experienced a rise in the value of farm lands, but every group shows an increase over its own figures for the previous year in the values of buildings, implements and live stock. The Lake Huron and West Midland counties exhibit a decrease in the total value of farm property, resulting from the heavy drop in the value of farm lands in those groups.

VALUE PER ACRE OCCUPIED.—The value per acre occupied of the four classes of farm property is given in the following table by county groups and for the province for the years 1888 and 1889:

Districts.	Land.		Buildings.		Implements.		Live Stock.		Total.	
	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Lake Erie	37.50	37.60	10.69	10.54	2.93	2.80	5.74	5.61	56.86	56.55
Lake Huron	31.14	32.21	8.37	8.24	2.42	2.35	5.57	5.42	47.50	48.22
Georgian Bay	24.17	24.51	7.29	7.08	2.24	2.15	4.56	4.44	38.26	38.18
West Midland	41.96	42.98	12.97	12.73	3.22	3.16	6.83	6.72	64.98	65.59
Lake Ontario	45.55	45.85	14.21	13.92	3.56	3.42	6.82	6.71	70.14	69.90
St. Lawrence and Ottawa	19.72	20.01	6.58	6.43	1.80	1.74	3.62	3.49	31.72	31.67
East Midland	15.33	15.55	4.61	4.56	1.31	1.26	2.75	2.62	24.00	23.99
Northern Districts	3.99	4.07	1.01	.98	.37	.35	.84	.84	6.21	6.24
The Province	28.66	29.21	8.73	8.58	2.34	2.27	4.79	4.69	44.52	44.75

Although an increase of fifteen cents is to be observed in the value per acre of buildings for the province compared with the figures for the previous year, and an advance of seven and ten cents respectively in the value of implements and live stock, the large decline of forty-five cents per acre in the value of land has reduced the total value per acre of farm property to twenty-three cents per acre less than that of the previous year. The Lake Huron and West Midland groups and the Northern Districts show a decrease in the total value per acre. In the matter of the value of live stock the West Midland leads the Lake Ontario group by one cent an acre, (as was the case last year), but in the three other items the last named group is far ahead of the West Midland, and still further ahead of any of the others.

RENTALS OF LEASED FARMS.—The next table furnishes by county groups and for the province the rentals per acre of farm land for 1889 and three preceding years, based on the acreage occupied and the acreage cleared:

Rent per Acre based on—		Lake Erie.	Lake Huron.	Georgian Bay.	West Midland	Lake Ontario.	St. Lawrence and Ottawa.	East Midland.	Northern Districts.	The Province.
		$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Acreage occupied.	1889.	2.09	1.79	1.60	2.25	2.72	1.32	1.60	0.51	1.96
	1888.	2.10	1.90	1.57	2.33	2.75	1.33	1.60	0.49	2.07
	1887.	2.07	1.94	1.55	2.32	2.62	1.33	1.56	0.41	2.02
	1886.	2.13	2.03	1.48	2.28	2.83	1.43	1.59	0.40	2.10
Acreage cleared.	1889.	2.88	2.51	2.26	2.94	3.29	2.16	2.57	1.70	2.80
	1888.	2.91	2.62	2.25	3.02	3.35	2.16	2.56	1.71	2.85
	1887.	2.88	2.74	2.25	3.06	3.22	2.21	2.50	1.96	2.83
	1886.	3.05	2.86	2.21	3.06	3.47	2.34	2.66	1.70	2.97

The figures for the province reveal a decline, being eleven cents less per acre occupied and five cents less per acre cleared than in the previous year. The groups showing an increase over their own figures for 1889 are the Georgian Bay and Northern Districts (the East Midland just holding its own) on the basis of acreage occupied, and the Georgian Bay and East Midland (the St. Lawrence and Ottawa group maintaining its rate of the previous year) on the basis of acreage cleared.

MARKET PRICES.—The prices appearing in the following table are made up from market reports of newspapers published at thirteen market centres, the figures being taken during the periods when each of the various articles of farm produce comprising the table are usually marketed. The average price commanded by each is also given for a series of years :

Markets.	Fall Wheat, per bushel.	Spring Wheat, per bushel.	Barley, per bushel.	Oats, per bushel.	Rye, per bushel.	Pease, per bushel.	Corn (in ear), per bushel.	Buckwheat, per bushel.	Beans, per bushel.	Potatoes, per bushel.	Carrots, per bushel.	Turnips, per bushel.	Hay, per ton.	Wool, per lb.
	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	$ c.	cts.
Brantford	85.8	85.8	42.5	29.5	51.6	52.3	25.1	34.6	162.5	54.6	....	....	8.20	20.2
Brockville	102.6	102.6	48.5	34.1	53.9	58.9	....	41.0	131.7	35.4	31.0	22.4	9.58	19.0
Chatham	81.5	81.5	36.0	24.6	....	50.3	....	....	118.0	....	....	....	7.25	19.0
Cobourg	90.1	91.8	41.9	30.6	44.6	55.0	....	....	....	36.6	....	....	9.75	19.0
Guelph	85.9	85.9	44.7	27.5	52.6	52.0	....	....	....	37.9	....	10.9	8.80	21.5
Kingston	90.6	89.1	42.3	31.1	43.3	55.8	25.0	31.8	....	47.9	....	..	7.60	19.3
Lindsay	85.5	86.7	41.2	25.6	55.0	56.3	....	....	....	23.2	....	....	8.27	....
London	87.5	86.6	40.6	28.0	52.5	52.6	25.9	40.3	121.4	54.3	23.5	23.3	8.09	20.0
Ottawa	93.5	93.5	53.5	34.2	....	61.3	....	....	....	40.5	25.2	23.5	12.10	19.0
Peterborough	81.5	81.7	40.8	27.9	46.7	55.6	....	....	....	28.3	....	....	7.83	19.0
St. Thomas	86.5	86.5	40.0	27.1	....	51.7	....	....	....	58.0	....	....	7.17	20.0
Stratford	86.7	86.8	41.6	26.4	....	54.2	..	....	....	51.5	....	....	7.46	....
Toronto	88.9	88.7	46.4	32.5	48.7	58.9	....	....	....	45.2	31.4	24.5	11.29	24.2
The Province :														
1889.	88.4	88.1	44.0	30.5	50.9	55.7	25.9	39.5	126.7	45.5	27.3	22.8	9.98	20.7
1888.	102.4	99.3	60.1	40.5	60.2	65.4	29.3	49.3	113.7	31.7	26.8	20.8	16.71	20.4
1887.	78.4	78.0	56.7	34.6	49.5	55.9	28.7	45.0	97.9	62.8	28.0	29.5	11.62	22.1
1886.	73.6	72.5	51.3	32.0	52.2	52.6	27.6	33.7	83.7	44.9	29.5	24.6	9.69	19.1
1885.	81.5	80.6	55.2	31.5	55.2	58.0	27.9	39.2	80.0	41.1	32.5	23.6	9.85	17.4
1884.	80.5	81.4	53.6	33.1	59.7	64.4	....	....	....	....	....	....	....	....
1883.	105.0	107.0	57.0	38.0	62.0	71.0	....	....	....	....	....	....	....	....
1882.	101.0	106.0	65.0	43.0	64.0	74.0	....	....	....	....	....	....	....	....
*1885-9.	83.9	82.6	53.2	33.9	53.8	57.5	28.1	40.6	99.5	42.8	28.9	23.9	11.13	19.8
1882-9.	88.8	88.9	55.5	35.3	59.8	61.5	....	....	....	....	....	....	....	....

* These are determined from the actual crop grown.

Taking the average for the province, there is a melancholy monotony in the decrease in the prices of grains compared with the figures paid in the previous year and with the average for the years 1882-9. Fall wheat was on the average 14 cents a bushel lower than in 1888 and 4.4 cents less than its average for the eight years. Spring wheat was 11.2 cents less than in the previous year, although nearly up to its average for the years 1882-9. Barley dropped to an alarmingly low figure, averaging only forty-four cents a bushel, compared with 60.1 in 1888 and an average of 55.5 for the eight years. Oats commanded only 30.5 cents, or about three-fourths of the price paid in 1888, and fell short of the average for the eight years by nearly five cents. Rye and pease were also under their respective averages for 1888 and the eight years period, and corn and buckwheat shared in the downward tendency of prices. Beans, potatoes, carrots and turnips made an advance over the prices of the previous year, and wool went slightly higher in price, but hay dropped from $11.62 in 1887 and $16.71 in 1888 to $9.98 in 1889, five of the thirteen markets failing to reach an average of $8 per ton.

VALUE OF CROPS.—The following table shows the marketable value of each crop, based upon the prices given in the previous table, for each of the five years 1885-9, together with the average for two different series of years. For the items bracketed no record was kept in the years prior to 1885, but their averages for the five years are added to those of the other items for the eight years 1882-9 so as to give the closest approximate average for the long term :

Crops.	1889.	1888.	1887.	1886.	1885.	Average 1885-9.	Average 1882-9.
	$	$	$	$	$	$	$
Fall Wheat.	11,493,648	14,162,726	11,321,439	13,300,361	17,504,799	13,556,595	16,033,528
Spring Wh't	5,019,680	6,408,384	4,393,831	6,900,951	7,358,684	6,016,306	7,828,330
Barley	10,290,011	14,043,308	9,715,448	10,009,799	9,126,540	10,637,021	11,214,244
Oats	19,625,622	26,514,099	17,247,443	18,772,995	17,397,369	19,911,506	20,138,588
Rye..	728,725	779,772	442,969	577,573	701,871	646,182	1,057,044
Pease	7,524,645	9,332,490	6,804,892	8,439,004	8,123,591	8,044,924	8,095,611
Corn	2,395,283	5,108,976	2,412,164	2,982,265	2,996,848	3,179,107	
Buckwheat .	502,668	602,585	461,409	565,725	600,024	546,482	
Beans	471,188	607,756	270,180	403,494	397,251	429,974	
Hay.....	37,208,564	33,570,674	35,947,748	29,016,182	32,033,727	33,555,379	55,667,962
Potatoes....	6,531,766	7,060,733	6,705,784	7,189,548	8,668,460	7,231,258	
Carrots.....	936,925	1,044,820	589,592	1,029,710	1,125,254	945,260	
Turnips	8,440,847	9,909,169	9,266,970	11,577,019	9,708,505	9,780,502	
Totals..	111,169,572	129,145,492	105,579,869	110,764,626	115,742,923	114,480,496	120,035,307

The total value of the above products is $111,169,572, being $17,975,920 less than in 1888, and considerably below the average of either the five years or the eight years periods. A reduction is observed in the value of every item but hay compared with the previous year. An immense falling off in value is noticeable in such staple crops as fall and spring wheat, barley, oats and pease, but the greatest proportion of decrease is found in the value of corn, which fell from $5,108,976 in 1888 to $2,395,283 in 1889. None of the averages given for 1882-9 are equalled, but rye, beans and hay surpass their figures for the five years 1885-9.

CROP VALUES BY COUNTY GROUPS.—The aggregate value of field crops for each of the five years 1882-5, with the averages for two series of years, is given in the following table by county groups and for the province :

Districts.	1889.	1888.	1887.	1886.	1885.	Average 1885-9.	Average 1882-9.
	$	$	$	$	$	$	$
Lake Erie..	12,926,470	17,889,286	12,080,651	13,485,030	14,995,559	14,275,399	14,480 720
Lake Huron	11,009,721	14,303,010	11,936,938	11,438,427	12,997,937	12,337,207	12,872,460
Georg'n Bay	10,391,701	10,969,814	9,447,927	9,447,776	9,825,779	10,016,599	10,722,641
W. Midland	22,006,961	29,217,226	22,805,391	23,691,683	24,684,983	24,481,249	25,631,527
Lk. Ontario.	25,342,044	27,908.395	22,386,070	24,623,942	25,444,492	25,140,989	26,491 988
St. L. & Ott.	19,928,380	20,171,732	18,975,474	19,046,820	19,554,504	19,535,382	20,525,429
E. Midland.	8,089,324	7,213,525	6,459,491	7,870,811	7,046,924	7,336,015	7,899,235
N. District.	1,474,971	1,472,504	1,487,927	1,160,137	1,192,745	1,357,657	1,411,307
Province..	111,169,572	129,145,492	105,579,869	110,764,626	115,742,923	114,480,496	120,035,307

Two groups only, the East Midland and the Northern Districts, show an increase over their figures of the previous year, and these groups are also the only ones giving higher

figures for 1889 than for the average for the eight years 1882-9. The Georgian Bay, Lake Ontario and St. Lawrence and Ottawa groups, together with the two previously named, exceed their respective averages for the five years 1885-9. While the West Midland group led in the value of field crops in 1888, the highest figures are given to the Lake Ontario counties in 1889, and the last named district also leads in the average for the five and eight years terms.

VALUE OF PRODUCE PER ACRE UNDER CROP.—The average value per acre of each of the principal field crops is given in the appended table by county groups for 1889, and for the province for 1888 and 1889, together with the averages for a series of eight and five years. The average value per acre of the combined field crops is also given for the same periods :

Crops.	Lake Erie.	Lake Huron.	Georgian Bay.	West Midland.	Lake Ontario.	St. Lawrence and Ottawa.	East Midland.	Northern Districts.	The Province.			
									1889.	1888.	1885-9	1882-9
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Fall Wheat	13 32	12 59	14 50	13 60	16 24	16 33	13 80	13 61	13 98	17 14	15 73	17 20
Spring Wheat	12 79	10 98	12 03	11 67	13 23	12 90	11 70	15 63	12 59	17 42	11 45	13 85
Barley	10 60	10 92	11 18	12 72	12 18	10 67	11 26	9 91	11 76	15 68	13 74	14 52
Oats	9 76	9 29	9 96	11 36	11 14	9 18	10 37	9 40	10 20	14 33	11 55	12 48
Rye	6 24	9 21	9 15	7 35	7 65	9 82	7 96	9 38	8 09	9 27	8 31	9 77
Pease	9 61	10 24	12 23	9 71	10 37	11 33	12 01	12 76	10 63	13 40	11 55	12 56
Corn	11 84	10 57	12 47	12 54	14 10	15 85	13 36	11 72	12 80	22 91	17 70	.....
Buckwheat	7 39	7 14	6 45	7 36	7 74	10 64	9 06	9 49	8 91	10 47	8 80	.....
Beans	19 54	23 20	25 34	24 24	23 75	29 85	18 81	24 97	21 58	26 77	19 45	.....
Hay	17 11	15 52	14 61	16 23	16 01	15 39	13 13	12 19	15 59	14 64	14 56	.....
Potatoes	28 64	41 77	49 01	38 35	43 63	46 42	61 28	76 27	44 80	45 87	48 87	.....
Carrots	63 17	74 57	93 34	77 00	91 23	78 61	96 73	89 41	83 20	90 66	94 18	.....
Turnips	61 34	70 06	72 33	67 88	84 21	81 54	82 73	81 27	75 97	87 55	92 12	.....
All crops 1889	13 63	13 59	14 46	14 93	15 24	13 75	13 93	15 71	14 37	.....	.....	.....
All crops 1888	18 70	17 91	15 91	19 72	17 13	14 40	13 12	16 70	.....	17 00	.....	.....
All crops 1885-9	15 25	15 69	14 91	16 77	15 54	13 98	13 19	15 80	.....	.....	15 24	.....
All crops 1882-9	15 71	16 53	16 03	17 74	16 48	14 63	14 13	16 54	.....	.....	.....	16 07

The average value of produce per acre under crop is $14.37, compared with $17 in 1888, an average of $15.24 for the five years 1885-9, and an average of $16.07 for the eight years period. The East Midland group shows a greater value per acre of produce than in the previous year or than the average for the five years, but no other district equals its own record for any of the periods forming the table. The highest figures are accredited to the Northern Districts, the Lake Ontario counties coming next, while the lowest value per acre is assigned to the Lake Huron group. Taking the leading items of the table, the highest average for fall wheat was $16.33 per acre, in the St. Lawrence and Ottawa counties; for spring wheat $15.63 in the Northern Districts; for barley $12.72 in the West Midland group, and for oats $11.36 in the West Midland. Hay averaged $17.11 in the Lake Erie counties, while potatoes ranged from $28.64 per acre in the Lake Erie group to $61.28 in the East Midland and $76.27 in the Northern Districts. Hay is the only crop worth more per acre in 1889 than in the previous year. Corn fell from $22.91 per acre in 1888 to $12.80 in 1889.

PER CENT. RATIOS OF VALUES PER ACRE.—In the following table the values per acre for 1889 are compared with the averages for the eight years 1882-9, by

means of per cent ratios, each of the leading crops being shown by county groups and for the province:

Districts.	Wheat, Fall	Spring Wheat.	Barley.	Oats.	Rye.	Pease.	Corn.	Buckwheat.	Beans.	Hay.	Potatoes.	Carrots.	Turnips.	crops. All field
Lake Erie	82	101	76	74	70	83	63	92	105	111	76	78	76	87
Lake Huron	74	93	73	74	90	76	60	92	114	102	86	78	75	82
Georgian Bay	79	91	80	86	83	93	87	96	134	110	88	95	86	90
West Midland	79	92	80	83	76	73	71	100	120	103	82	79	72	84
Lake Ontario	91	90	83	85	86	85	87	86	114	114	95	89	89	92
St. L. & Ottawa	97	88	79	80	90	94	99	116	129	106	89	100	105	94
East Midland	78	89	84	94	85	105	93	105	103	109	116	103	101	99
Northern Districts	75	92	76	84	81	89	99	96	115	95	114	121	111	95
The Province	81	91	81	82	83	85	72	101	111	107	92	88	82	89

For the province buckwheat, beans and hay are the only crops showing triple figures, the principal grains ranging from eighty-one to ninety-one per cent. of their average for the eight years. In the Lake Erie counties spring wheat was 101, but no other group showed three figures for any of the grains excepting buckwheat. Beans and hay went over 100 in every district, while potatoes fell short of the standard in all but the two last named in the table. For all field crops, the ratio of the province is eighty-nine. Of the groups, the East Midland reaches the highest figures, viz., ninety-nine, while the Lake Huron counties show but eighty-two per cent.

WAGES OF FARM LABORERS.

The following table gives the average rates of wages for farm laborers by the year and by the month, with and without board, by county groups and for the province for 1888 and 1889, together with their averages for the eight years 1882-9; also the average amount paid domestic servants in 1888 and 1889:

Districts.	Farm Laborers.												Domestic servants per month with board.	
	Per year.						Per month.							
	With board.			Without board.			With board.			Without board.				
	1889	1888	1882-9	1889	1888	1882-9	1889.	1888.	1882-9	1889.	1888.	1882-9	1889	1888
	$	$	$	$	$	$	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Lake Erie	160	154	160	249	248	249	17 19	16 56	17 51	25 45	25 50	26 38	6 93	6 41
Lake Huron	163	158	164	250	256	258	17 98	17 21	18 10	26 39	26 81	27 54	6 38	6 13
Georgian Bay	160	155	160	253	251	255	17 44	17 01	17 98	26 66	26 86	27 54	6 33	6 28
West Midland	161	155	162	245	247	251	17 20	16 65	17 69	25 31	26 40	26 76	6 76	6 37
Lake Ontario	163	159	164	248	252	252	17 44	16 84	17 67	25 54	26 34	26 73	6 86	6 47
St. L. & Ottawa	159	157	163	241	252	251	17 92	17 43	18 22	26 24	26 72	26 98	6 37	5 98
East Midland	165	160	166	263	253	257	17 67	17 34	17 98	26 55	26 37	27 19	6 32	6 06
Northern Districts.	175	170	174	278	267	275	19 38	19 62	19 73	28 83	29 40	29 65	6 32	6 43
The Province	162	157	163	249	251	253	17 59	16 99	17 83	26 01	26 50	27 10	6 61	6 28

Briefly stated, wages with board have gone up, but there is a decrease in the rate without board. The average yearly wages paid with board is $162, being five dollars more than in 1888, (an increase occurring in every group) but one dollar below the average for the eight years 1882-9. The average wages for the year without board was $249, less by two dollars than in 1888 and four dollars below the average for the eight years. Four groups, however, show an increase over 1888.

STATISTICS OF

VALUES, RENT AND FARM WAGES.

FARM VALUES—LAND, BUILDINGS AND IMPLEMENTS

TABLE No. I.—Showing by County Municipalities and groups of Counties the Values of Farm Land Buildings and Implements in Ontario in 1888 and 1889.

Counties.	Farm land.		Farm buildings.		Farm implements.	
	1889.	1888.	1889.	1888.	1889.	1888.
	$	$	$	$	$	$
Essex	16,359,666	15,898,606	4,262,194	4,074,755	1,096,392	1,042,198
Kent	23,766,542	23,695,456	5,326,115	5,201,284	1,584,155	1,505,851
Elgin	17,606,191	18,094,749	4,755,988	4,779,887	1,312,551	1,226,683
Norfolk	11,941,445	11,882,035	4,121,397	4,044,551	1,069,101	1,013,366
Haldimand	9,526,805	9,555,471	3,515,166	3,453,012	955,267	913,257
Welland	8,664,498	8,796,445	3,058,472	3,083,137	859,178	839,041
Totals	87,865,147	87,922,762	25,039,332	24,636,626	6,876,644	6,540,396
Lambton	19,865,126	20,065,784	4,633,682	4,503,092	1,310,583	1,241,082
Huron	30,148,600	31,668,697	8,351,173	8,326,194	2,397,494	2,373,756
Bruce	20,683,248	21,411,230	6,006,764	5,888,984	1,795,232	1,721,220
Totals	70,696,974	73,145,711	18,991,619	18,718,270	5,503,309	5,336,058
Grey	22,238,762	22,577,423	7,105,583	6,793,100	2,222,106	2,110,262
Simcoe	26,691,681	26,718,399	7,654,097	7,438,384	2,307,594	2,206,113
Totals	48,930,443	49,295,822	14,759,680	14,231,484	4,529,700	4,316,375
Middlesex	35,459,934	36,670,045	10,276,374	10,134,491	2,485,829	2,432,318
Oxford	22,938,421	23,240,548	7,077,071	6,993,153	1,591,264	1,575,509
Brant	10,670,935	10,877,610	3,748,820	3,689,783	826,939	807,558
Perth	22,118,289	22,638,986	6,606,954	6,464,730	1,742,971	1,713,836
Wellington	21,774,648	22,494,471	7,071,961	6,926,504	1,936,157	1,879,764
Waterloo	14,409,922	14,870,921	4,773,232	4,797,218	1,186,659	1,164,533
Dufferin	9,015,108	9,006,102	2,607,350	2,394,261	709,032	685,055
Totals	136,387,257	139,798,683	42,161,762	41,400,140	10,478,851	10,258,573
Lincoln	8,885,403	9,002,435	3,519,861	3,427,323	832,883	787,224
Wentworth	13,860,384	14,042,942	4,811,264	4,653,060	1,199,717	1,132,877
Halton	9,231,520	9,353,110	3,218,964	3,143,520	754,617	722,813
Peel	14,218,973	14,148,232	4,773,029	4,670,283	1,121,742	1,085,907
York	29,915,054	29,589,569	8,187,700	7,964,689	2,140,772	2,102,919
Ontario	20,682,965	20,934,175	5,950,238	5,799,452	1,522,000	1,456,459
Durham	16,901,141	17,210,938	4,363,883	4,368,251	1,168,638	1,123,690
Northumberland	15,993,842	16,454,570	5,410,876	5,352,004	1,336,511	1,286,344
Prince Edward	9,214,982	9,160,022	3,105,068	3,092,697	788,027	753,372
Totals	138,904,264	139,895,993	43,340,883	42,471,279	10,864,907	10,451,605
Lennox and Addington	10,270,957	10,332,955	3,531,754	3,409,029	796,799	780,410
Frontenac	9,446,098	9,297,341	2,968,677	2,939,284	900,764	875,378
Leeds and Grenville	18,396,123	18,676,267	6,508,528	6,418,667	1,657,423	1,574,001
Dundas	8,573,212	8,677,340	2,915,796	2,884,071	694,875	665,589
Stormont	6,170,322	6,394,116	2,089,032	2,038,080	583,996	552,503
Glengarry	7,805,957	8,080,701	2,543,421	2,355,019	696,648	682,988
Prescott	6,651,234	6,736,067	2,033,614	1,936,775	621,669	594,899
Russell	4,180,338	4,296,359	1,443,003	1,367,775	344,522	330,953
Carleton	16,179,566	16,342,996	4,804,864	4,660,392	1,331,767	1,310,794
Renfrew	7,123,449	6,942,933	2,588,078	2,515,139	934,024	878,668
Lanark	9,280,306	9,107,268	3,300,732	3,176,835	933,871	882,676
Totals	104,077,562	104,884,323	34,727,499	33,701,066	9,496,358	9,128,859
Victoria	12,834,370	12,808,752	3,183,917	3,127,620	1,005,748	976,454
Peterborough	10,895,756	11,016,942	3,469,814	3,339,571	891,318	827,593
Haliburton	911,515	892,767	267,058	246,591	80,803	71,889
Hastings	16,086,790	16,216,522	5,316,672	5,306,060	1,516,777	1,455,640
Totals	40,728,431	40,934,983	12,237,461	12,019,842	3,494,646	3,331,576
Muskoka	2,018,301	1,990,435	609,246	565,163	216,490	191,924
Parry Sound	1,059,968	1,013,354	224,559	200,858	90,199	78,094
Algoma	1,661,086	1,598,735	372,196	348,498	134,602	121,372
Totals	4,739,355	4,602,524	1,206,001	1,114,519	441,291	391,390
The Province	632,329,433	640,480,801	192,464,237	188,293,226	51,685,706	49,754,832

FARM VALUES—LIVE STOCK AND TOTAL PROPERTY—RENTALS.

TABLE No. 11.—Showing by County Municipalities and groups of Counties the values of Farm Live Stock and Total Farm Property in Ontario in 1888 and 1889: also the rent per acre of leased farms as reported in 1888 and 1889.

Counties.	Farm live stock.		Total farm property.		Rent per acre on land.			
					Occupied.		Cleared.	
	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.
	$	$	$	$	$ c.	$ c.	$ c.	$ c.
Essex	2,352,893	2,318,121	24,071,145	23,333,680	1 85	1 81	2 97	2 91
Kent	3,261,733	3,219,875	33,938,545	33,622,466	2 55	2 57	3 47	3 50
Elgin	2,676,418	2,568,539	26,351,148	26,669,858	2 14	2 22	2 89	3 00
Norfolk	1,940,819	1,897,184	19,072,762	18,837,136	1 86	1 88	2 73	2 75
Haldimand	1,796,454	1,724,044	15,793,692	15,645,784	1 80	1 81	2 30	2 31
Welland	1,429,022	1,403,754	14,011,170	14,122,377	1 94	1 95	2 45	2 46
Totals	13,457,339	13,131,517	133,238,462	132,231,301	2 09	2 10	2 88	2 91
Lambton	2,903,227	2,829,656	28,712,618	28,639,614	1 74	1 76	2 76	2 80
Huron	5,630,301	5,492,977	46,527,568	47,861,624	1 97	2 10	2 56	2 73
Bruce	4,104,874	3,977,591	32,590,118	32,999,025	1 66	1 74	2 30	2 41
Totals	12,638,402	12,300,224	107,830,304	109,500,263	1 79	1 90	2 51	2 62
Grey	4,903,497	4,779,237	36,469,948	36,260,022	1 27	1 29	1 89	1 93
Simcoe	4,318,500	4,152,404	40,971,872	40,515,300	1 88	1 90	2 58	2 60
Totals	9,221,997	8,931,641	77,441,820	76,775,322	1 60	1 57	2 26	2 25
Middlesex	5,547,893	5,360,283	53,770,030	54,597,137	2 56	2 63	3 30	3 40
Oxford	3,548,079	3,424,787	35,154,835	35,233,997	2 67	2 70	3 50	3 54
Brant	1,598,778	1,552,212	16,845,472	16,927,163	2 70	2 76	3 28	3 36
Perth	3,821,420	3,764,946	34,289,634	34,582,498	2 34	2 43	2 97	3 09
Wellington	4,078,722	4,095,102	34,861,488	35,395,841	2 05	2 10	2 58	2 65
Waterloo	2,093,426	2,162,630	22,463,239	22,995,302	2 19	2 24	2 74	2 80
Dufferin	1,520,068	1,500,561	13,851,558	13,585,979	1 43	1 43	2 10	2 11
Totals	22,208,386	21,860,521	211,236,256	213,317,917	2 25	2 33	2 94	3 02
Lincoln	1,383,222	1,361,439	14,621,369	14,578,421	2 39	2 41	2 88	2 91
Wentworth	2,055,322	2,022,955	21,926,687	21,851,834	2 69	2 74	3 39	3 46
Halton	1,434,442	1,438,758	14,639,543	14,658,201	2 32	2 32	3 01	3 01
Peel	2,145,357	2,184,681	22,259,101	22,089,103	2 82	2 83	3 44	3 46
York	4,103,439	4,046,784	44,346,965	43,703,961	3 03	3 03	3 63	3 63
Ontario	3,384,931	3,295,941	31,540,134	31,486,027	2 78	2 83	3 39	3 45
Durham	2,328,347	2,305,294	24,762,009	25,008,173	2 98	3 09	3 53	3 65
Northumberland	2,543,224	2,483,617	25,284,453	25,576,535	2 09	2 20	2 56	2 70
Prince Edward	1,420,607	1,333,903	14,528,684	14,339,994	2 34	2 34	2 95	2 95
Totals	20,798,891	20,473,372	213,908,945	213,292,249	2 72	2 75	3 29	3 35
Lennox and Addington	1,678,187	1,479,883	16,277,697	16,002,277	1 33	1 38	2 12	2 19
Frontenac	1,764,648	1,588,342	15,080,187	14,700,345	1 24	1 25	1 97	1 98
Leeds and Grenville	3,383,691	3,297,944	29,945,765	29,966,879	1 27	1 30	2 18	2 23
Dundas	1,337,545	1,299,849	13,521,428	13,526,849	1 81	1 84	2 63	2 67
Stormont	1,154,348	1,148,605	9,997,698	10,133,304	1 43	1 46	2 00	2 04
Glengarry	1,467,639	1,427,664	12,513,665	12,546,372	1 37	1 38	2 42	2 43
Prescott	1,147,800	1,084,877	10,454,317	10,352,618	1 49	1 51	2 20	2 23
Russell	705,147	705,147	6,673,010	6,700,214	1 20	1 21	2 01	2 03
Carleton	2,516,289	2,464,534	24,832,486	24,778,716	2 09	2 09	2 82	2 83
Renfrew	2,026,273	1,982,655	12,671,824	12,319,395	0 78	0 78	1 74	1 74
Lanark	1,917,772	1,819,518	15,432,681	14,986,297	0 93	0 94	1 45	1 47
Totals	19,099,339	18,299,018	167,400,758	166,013,266	1 32	1 33	2 16	2 16
Victoria	2,097,424	2,036,334	19,121,459	18,949,160	1 88	1 88	2 78	2 78
Peterborough	1,707,348	1,649,612	16,964,236	16,833,718	1 39	1 39	2 25	2 25
Haliburton	208,436	197,570	1,467,812	1,408,817	0 30	0 30	1 53	1 51
Hastings	3,295,860	3,009,918	26,216,099	25,988,140	1 75	1 82	2 60	2 70
Totals	7,309,068	6,893,434	63,769,606	63,179,835	1 61	1 60	2 57	2 56
Muskoka	468,283	457,755	3,312,320	3,205,277	0 30	0 30	1 51	1 50
Parry Sound	214,402	200,189	1,589,128	1,492,495	0 47	0 46	1 75	1 72
Algoma	315,181	291,564	2,483,065	2,360,169	0 81	0 81	1 85	1 85
Totals	997,866	949,508	7,384,513	7,057,941	0 51	0 49	1 70	1 71
The Province	105,731,288	102,839,235	982,210,664	981,368,094	1 96	2 07	2 80	2 85

FARM VALUES—AVERAGE PER ACRE.

TABLE No. III.—Showing by County Municipalities and groups of Counties the average value per acre occupied of Farm Land, Buildings, Implements and Live Stock in Ontario for the years 1888 and 1889.

Counties.	Lands.		Buildings.		Implements.		Live stock.		Total property.	
	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Essex	37 99	36 84	9 90	9 44	2 55	2 42	5 46	5 37	55 90	54 07
Kent	41 69	42 16	9 34	9 25	2 78	2 68	5 72	5 73	59 53	59 82
Elgin	40 38	41 08	10 91	10 85	3 01	2 78	6 14	5 83	60 44	60 54
Norfolk	30 11	30 08	10 39	10 24	2 70	2 56	4 89	4 80	48 09	47 68
Haldimand	33 89	33 95	12 51	12 27	3 40	3 25	6 39	6 13	56 19	55 60
Welland	37 85	38 61	13 36	13 53	3 75	3 68	6 24	6 17	61 20	61 99
Totals	37 50	37 60	10 69	10 54	2 93	2 80	5 74	5 61	56 86	56 55
Lambton	30 05	30 41	7 01	6 83	1 98	1 88	4 39	4 29	43 43	43 41
Huron	37 71	39 62	10 45	10 42	3 00	2 97	7 04	6 87	58 20	59 88
Bruce	25 55	26 38	7 42	7 26	2 22	2 12	5 07	4 90	40 26	40 66
Totals	31 14	32 21	8 37	8 24	2 42	2 35	5 57	5 42	47 50	48 22
Grey	21 00	21 37	6 71	6 43	2 10	2 00	4 63	4 52	34 44	34 32
Simcoe	27 65	28 00	7 93	7 89	2 39	2 31	4 47	4 35	42 44	42 46
Totals	24 17	24 51	7 29	7 08	2 24	2 15	4 56	4 44	38 26	38 18
Middlesex	46 77	48 38	13 55	13 37	3 28	3 21	7 32	7 07	70 92	72 03
Oxford	48 57	49 31	14 99	14 84	3 37	3 34	7 51	7 27	74 44	74 76
Brant	49 54	50 36	17 40	17 08	3 84	3 74	7 42	7 19	78 20	78 37
Perth	42 68	43 68	12 75	12 47	3 36	3 31	7 38	7 26	66 17	66 72
Wellington	34 74	35 87	11 28	11 04	3 09	3 00	6 51	6 53	55 62	56 44
Waterloo	47 07	48 66	15 59	15 70	3 87	3 81	6 84	7 08	73 37	75 25
Dufferin	25 50	25 29	7 37	6 72	2 00	1 93	4 30	4 21	39 17	38 15
Totals	41 96	42 98	12 97	12 73	3 22	3 16	6 83	6 72	64 98	65 59
Lincoln	46 64	47 16	18 48	17 96	4 37	4 12	7 26	7 13	76 75	76 37
Wentworth	50 83	51 39	17 65	17 03	4 40	4 15	7 54	7 40	80 42	79 97
Halton	41 14	41 84	14 35	14 06	3 36	3 24	6 39	6 44	65 24	65 58
Peel	49 43	49 11	16 59	16 21	3 90	3 77	7 46	7 58	77 38	76 67
York	55 70	54 85	15 24	14 76	3 99	3 90	7 64	7 50	82 57	81 01
Ontario	41 30	41 73	11 88	11 56	3 04	2 91	6 75	6 57	62 97	62 77
Durham	45 89	46 67	11 85	11 84	3 17	3 05	6 32	6 25	67 23	67 81
Northumberland	36 63	38 02	12 39	12 37	3 06	2 97	5 82	5 74	57 90	59 10
Prince Edward	39 82	39 33	13 42	13 28	3 41	3 23	6 14	5 73	62 79	61 57
Totals	45 55	45 85	14 21	13 92	3 56	3 42	6 82	6 71	70 14	69 90
Lennox and Addington	24 88	25 39	8 55	8 38	1 93	1 92	4 07	3 64	39 43	39 33
Frontenac	13 92	14 01	4 37	4 43	1 33	1 32	2 60	2 40	22 22	22 16
Leeds and Grenville	24 72	25 12	8 75	8 63	2 23	2 12	4 55	4 43	40 25	40 30
Dundas	36 22	36 53	12 32	12 14	2 93	2 80	5 65	5 47	57 12	56 94
Stormont	24 95	25 57	8 45	8 15	2 36	2 21	4 67	4 59	40 43	40 52
Glengarry	27 04	28 23	8 81	8 23	2 41	2 38	5 09	4 99	43 35	43 83
Prescott	23 28	23 73	7 12	6 82	2 18	2 10	4 02	3 82	36 60	36 47
Russell	16 63	16 92	5 74	5 39	1 37	1 30	2 81	2 78	26 55	26 39
Carleton	28 75	28 71	8 54	8 18	2 37	2 30	4 47	4 33	44 13	43 52
Renfrew	7 91	7 85	2 87	2 84	1 04	0 99	2 25	2 24	14 07	13 92
Lanark	13 88	13 76	4 94	4 80	1 40	1 33	2 87	2 75	23 09	22 64
Totals	19 72	20 01	6 58	6 43	1 80	1 74	3 62	3 49	31 72	31 67
Victoria	22 59	22 51	5 69	5 50	1 77	1 72	3 69	3 58	33 65	33 31
Peterborough	19 94	20 35	6 35	6 17	1 63	1 53	3 12	3 05	31 04	31 10
Haliburton	1 64	1 59	0 48	0 44	0 14	0 13	0 37	0 35	2 63	2 51
Hastings	16 33	16 87	5 40	5 52	1 54	1 52	3 35	3 13	26 62	27 04
Totals	15 33	15 55	4 61	4 56	1 31	1 26	2 75	2 62	24 00	23 99
Muskoka	3 92	3 91	1 18	1 11	0 42	0 38	0 91	0 90	6 43	6 30
Parry Sound	3 09	3 31	0 66	0 66	0 26	0 25	0 63	0 66	4 64	4 88
Algoma	5 00	5 06	1 12	1 10	0 41	0 38	0 95	0 92	7 48	7 46
Totals	3 99	4 07	1 01	0 98	0 37	0 35	0 84	0 84	6 21	6 24
The Province	28 66	29 21	8 73	8 58	2 34	2 27	4 79	4 69	44 52	44 75

MARKET PRICES.

TABLE No. IV.—Showing the average price of Agricultural Products at the leading markets of Ontario for July-December, 1889, and the average for the half year, and for the Province.

Products.	Brantford.	Brockville.	Chatham.	Cobourg.	Guelph.	Kingston.	Lindsay.	London.	Ottawa.	Peterborough.	St. Thomas.	Stratford.	Toronto.	The Province.	
														1889.	1888
FALL WHEAT: per bush.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
July	90.3	103.0	88.5	97.5	93.0	100.0	95.0	95.1	97.5	102.5	94.5	92.1	101.6	98.2	94.3
August	88 0	102 5	86.8	97.5	90.6	97.2	96.5	92 4	.....	81.0	88.8	92.6	93.3	93.0	91.9
September	85.9	102.5	87.0	97.5	88.0	89.3	86.0	88.4	87.5	82.5	85.6	87.5	87.5	88.2	99.6
October	84.2	102.5	82.0	81.9	82.0	89.2	80.0	85.0	.....	77.3	82.1	85.1	83.1	84.0	112.6
November	81.8	102.5	77.3	80.0	80.0	83.1	77.6	81.8	92.5	72.5	80.3	80.6	83.3	82.8	113.1
December	81.1	102.5	78.3	80.0	80.0	87.3	74.0	81.9	92.5	.....	82.3	82.0	84.8	83.7	101.8
Average	85.8	102.6	81.5	90.1	85.9	90.6	85.5	87.5	93.5	81.5	86.5	86.7	88.9	88.4	102.4
SPRING WHEAT: per bush.															
July	90.3	103.0	88.5	100.5	93.0	100.0	95.0	92.8	97.5	102.8	94.5	93.0	101.3	97.6	87.3
August	87.3	102.5	86.8	100.5	90.6	94.2	95.6	90.5	.....	82 5	88 8	92.6	94.1	92 9	86.4
September	85.9	102.5	87.0	100.5	88.0	83.3	95.0	86.7	87.5	82.5	85.6	87.5	87.5	88.1	95.3
October	84.7	102.5	82.0	81.9	82.0	89.2	80.0	85.4	.....	77.3	82.1	85.1	83.2	84.1	111.2
November	81.5	102.5	77.3	80.0	80.0	83.1	77.6	82.2	92.5	72.5	80.3	80.6	83.3	82.9	112.7
December	81.4	102.5	78.3	80.0	80.0	86.5	74.0	81.9	92.5	.....	82.3	82.0	83.6	83 2	101.9
Average	85.8	102.6	81.5	91.8	85.9	89.1	86.7	86.6	93.5	81.7	86.5	86.8	88.7	88.1	99.3
BARLEY: per bush.															
July	40.7	48 3	37.2	42.5	45.0	52.0	44.6	38.4	57.5	44.0	....	38.8	51.2	46.3	57 7
August	41.9	48.5	....	42.5	46.5	52 0	44 0	42.0	....	46.0	....	41.0	49.7	46.1	55.6
September	44.0	48.5	....	42.5	48.8	41.7	42 9	42 0	52.5	43.3	....	42.5	43.4	43.5	59.5
October	42 8	48.5	37.2	44.5	44.8	41.5	43.5	41.4	.....	39.8	40.0	42.5	48.2	45.1	65.2
November	47.0	48.5	36.4	39 0	41.7	35.8	36 7	40.2	52.5	40.0	40 0	42.5	43.3	42 0	62.6
December	39.4	48.5	34.8	37.5	40.5	35.3	34.2	39.8	47.5	36.0	....	42.5	42.8	41.2	57.0
Average	42.5	48.5	36.0	41.9	44.7	42.3	41.2	40 6	53.5	40.8	40.0	41.6	46.4	44.0	60.1
OATS: per bush.															
July	28.0	35.2	26.5	35.0	28.6	33.0	27.5	28.3	35.9	30 8	27.3	27.5	33.5	31.3	51.7
August	28.1	38 0	....	35.0	29.0	31.5	28.0	30.0	38.2	31.5	32.0	28.0	33.9	32.4	45.2
September	27.4	34.7	....	35.0	28.1	29.5	24.9	28 4	37 5	30.3	27.5	25.0	31.7	30.5	36.6
October	26.2	34.4	24.0	25 0	25.9	26.1	22.1	26.5	32.1	26.0	24.0	24.6	32.4	29 4	26.7
November	26.0	31.0	24.5	25.0	26.8	25.8	25.0	27.3	32 5	27.0	24.3	26.5	31.9	29.4	37.3
December	25.8	31.0	24.5	25.0	26.6	25.5	26.0	27.3	32.3	26.5	24.5	26.1	31 5	29 7	35.7
Average	29.5	34.1	24.6	30.6	27.5	31.1	25.6	28.0	34.2	27.9	27.1	26.4	32.5	30.5	40.5
RYE: per bush.															
July	59.0	53.5	....	50.0	57.5	46.7	55.0	56.0	.....	.....	.....	.....	.....	55.1	55.5
August	56.7	55.0	....	50.0	57.5	42.5	55.0	56.0	.....	.....	.....	.....	.....	54.8	57 6
September	50 0	55.0	....	50.0	55.0	45 0	55.0	53.8	.....	50.0	.....	.....	50.0	51 9	60.8
October	49.0	55.0	....	38.8	52.0	42 5	55.0	53.7	.....	46.0	.....	.....	50.0	50.7	59.9
November	.....	55.0	....	35.0	49.5	40.8	55.0	51.0	.....	.....	.....	.....	49.6	50.1	62 6
December	41.0	50.0	..	37.5	42.5	41.5	55.0	45.1	.....	.....	.....	.....	45.1	45.1	60.7
Average	51.6	53.9	..	44.6	52.6	43.3	55.0	52.5	.....	46.7	.....	.....	48.7	50.9	60.2
PEASE: per bush.															
July	50.0	58.5	....	55.0	51.0	57.0	58.0	49.5	62.5	59.0	....	53.5	59.2	54.2	71.0
August	50.9	58.5	....	55.0	54.5	55.0	58 0	52.5	.....	57.5	....	54.4	59.8	55.1	68.4
September	52 9	58.5	....	55.0	52.5	56 0	58.5	52.5	62.5	57.3	52.5	54.8	58.8	55.5	64.0
October	53.2	60.1	50.0	55.0	50.5	55.6	51.3	52.9	.....	55.0	51.0	53.3	59.7	56.2	63.8
November	53.5	60.0	....	55.0	50.8	55.5	55.0	53.0	62.5	56.0	51.3	53.3	57.3	55.6	63.9
December	54.5	57.5	50.3	55.0	52.0	56.0	57.5	55.2	57.5	50.0	52.5	56.4	59.2	56.9	61.6
Average	52.3	58.9	50.3	55.0	52.0	55.8	56.3	52.6	61.3	55.6	51.7	54.2	58.9	55 7	65.4

MARKET PRICES.—*Continued.*

TABLE No. IV.—Showing the average prices of Agricultural Products.—*Continued.*

Products.	Brantford.	Brockville.	Chatham.	Cobourg.	Guelph.	Kingston.	Lindsay.	London.	Ottawa.	Peterborough.	St. Thomas.	Stratford.	Toronto.	The Province. 1889.	The Province. 1888.
CORN: (in ear). per bush.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
October	26.5	.....	.....	.....	.....	.....	.....	26.6	.....	.....	.....	.....	.....	26.6	31.5
November	22.8	.....	.....	.....	.....	.....	.....	26.4	.....	.....	.....	.....	.....	26.4	30.6
December	25.1	.....	.....	.....	.....	25.0	.....	24.7	.....	.....	.....	.....	.....	24.7	26.2
Average	25.1	.....	.....	.....	.....	25.0	.....	25.9	.....	.....	.....	.....	.....	25.9	29.3
BUCKWHEAT: per bush.															
October	32.5	45.5	.....	.....	.....	35.0	.....	43.9	.....	.....	.....	.....	.....	42.9	53.1
November	.....	40.4	.....	.....	.....	31.0	.....	41.0	.....	.....	.....	.....	.....	39.9	48.4
December	36.0	36.0	.....	.....	.....	28.0	.....	36.1	.....	.....	.....	.....	.....	35.8	48.2
Average	34.6	41.0	.....	.....	.....	31.8	.....	40.3	.....	.....	.....	.....	.....	39.5	49.3
BEANS: per bush.															
October	162.5	137.5	127.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	138.2	110.4
November	.....	118.8	112.5	.....	.....	.....	.....	125.0	.....	.....	.....	.....	.....	118.8	111.6
December	162.5	137.5	113.1	.....	.....	.....	.....	121.0	.....	.....	.....	.....	.....	125.4	116.9
Average	162.5	131.7	118.0	.....	.....	.....	.....	121.4	.....	.....	.....	.....	.....	126.7	113.7
POTATOES: p. bush.															
October	51.5	37.3	.....	36.6	39.0	52.1	24.5	57.6	40.1	28.3	60.0	53.4	45.8	46.0	33.4
November	.....	31.7	.....	36.6	37.8	45.0	22.5	52.2	36.4	.....	55.0	52.0	44.0	44.2	31.6
December	55.4	36.7	.....	36.6	36.6	41.5	22.5	52.8	44.6	.....	56.7	49.1	45.7	46.2	29.9
Average	54.6	35.4	.....	36.6	37.9	47.9	23.2	54.3	40.5	28.3	58.0	51.5	45.2	45.5	31.7
CARROTS: p. bush.															
October	.....	32.7	.....	.....	.....	.....	.....	26.7	24.0	.....	.....	.....	.....	27.7	24.6
November	.....	30.0	.....	.....	.....	.....	.....	23.6	25.4	.....	.....	.....	33.2	28.0	27.8
December	.....	30.0	.....	.....	.....	.....	.....	22.5	25.9	.....	.....	.....	30.0	26.6	27.2
Average	.....	31.0	.....	.....	.....	.....	.....	23.5	25.2	.....	.....	.....	31.4	27.3	26.8
TURNIPS: p. bush.															
October	.....	23.7	.....	.....	10.0	.....	.....	25.0	23.5	.....	.....	.....	24.7	22.9	22.0
November	.....	21.7	.....	.....	11.5	.....	.....	23.6	.....	.....	.....	.....	24.2	23.1	19.7
December	.....	21.7	.....	.....	11.5	.....	.....	22.5	.....	.....	.....	.....	24.5	22.5	21.0
Average	.....	22.4	.....	.....	10.9	.....	.....	23.3	23.5	.....	.....	.....	24.5	22.8	20.8
WOOL: per lb.															
July	20.0	19 2	19.0	19.0	21.5	18.5	.....	21.0	19.0	.....	20.0	.....	21.8	20.6	20.6
August	.....	19.0	.....	19.0	21.5	18.5	.....	20.0	.....	.....	20.0	.....	23.4	20.5	20.5
September	20.5	19.0	.....	19.0	21.5	18.6	.....	20.0	19.0	19 0	.....	.....	23.8	20.8	20.2
October	20.0	19.0	.....	19.0	21.5	20.5	.....	20.0	.....	19.0	.....	.....	24.3	20.8	20.4
November	20.3	19.0	.....	19.0	21.5	20.0	.....	20.0	19.0	.....	.....	.....	25.4	21.0	20.3
December	20.0	19.0	.....	19.0	21.5	19.7	.....	18.5	19.0	.....	.....	.....	26.4	20.7	20.4
Average	20.2	19.0	19.0	19.0	21.5	19.3	.....	20.0	19.0	19.0	20.0	.....	24.2	20.7	20.4
HAY: per ton.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
July	8 10	10 50	7 25	11 00	9 00	9 50	9 88	8 29	12 68	.....	7 50	8 50	12 31	10 63	14 84
August	8 25	9 00	.....	11 00	8 70	7 70	7 75	7 54	9 83	.....	7 00	8 10	12 13	9 90	15 63
September	8 42	11 00	.....	11 00	9 38	7 67	8 00	8 50	11 81	7 50	7 00	6 50	11 22	10 08	16 45
October	8 33	10 00	.....	9 50	9 00	7 00	8 00	8 25	13 28	7 90	7 00	6 50	10 56	9 97	17 77
November	7 25	8 50	.....	8 00	8 67	7 58	8 00	8 08	12 50	.....	7 00	7 50	10 84	9 64	18 21
December	8 38	8 50	.....	6 50	8 00	7 33	8 00	8 00	12 19	.....	8 00	7 50	10 74	9 56	17 28
Average	8 20	9 58	7 25	9 75	8 80	7 60	8 27	8 09	12 10	7 83	7 17	7 46	11 29	9 98	16 71

VALUES—FALL AND SPRING WHEAT.

TABLE No. V.—Showing by County Municipalities and groups of Counties the value at market prices of the total crop of Fall and Spring Wheat in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9.

Counties.	Fall Wheat.			Spring Wheat.		
	1889.	1888.	1882-9.	1889.	1888.	1882-9.
	$	$	$	$	$	$
Essex	406,676	685,719	561,488	7,896	11,403	20,028
Kent	742,660	1,217,362	1,041,207	33,133	37,471	36,307
Elgin	556,238	782,010	753,102	6,532	8,452	21,469
Norfolk	407,017	528,315	513,147	5,311	5,852	10,037
Haldimand	425,283	368,130	469,065	20,357	34,501	33,647
Welland	251,341	274,720	313,168	2,364	4,161	17,672
Totals	2,789,215	3,856,256	3,651,177	75,593	101,840	139,160
Lambton	539,359	715,696	589,525	20,083	26,845	75,732
Huron	639,448	943,625	1,158,919	25,795	28,576	260,230
Bruce	422,891	676,121	823,224	85,462	117,011	160,581
Totals	1,601,698	2,335,442	2,571,668	131,340	172,432	436,543
Grey	294,444	451,491	492,271	252,528	352,473	526,555
Simcoe	887,419	1,013,801	1,019,167	397,429	479,134	474,242
Totals	1,181,863	1,465,292	1,511,138	649,957	831,607	1,000,797
Middlesex	777,286	1,158,976	1,262,370	16,284	19,035	137,733
Oxford	515,250	705,653	675,760	22,158	22,862	128,173
Brant	303,205	327,040	477,944	733	598	13,499
Perth	467,593	641,786	781,306	28,079	21,784	157,043
Wellington	224,018	337,402	470,024	108,509	114,842	254,228
Waterloo	539,738	632,389	720,284	5,089	6,971	65,203
Dufferin	59,169	117,865	182,028	194,959	296,319	257,256
Totals	2,886,259	3,921,111	4,569,716	375,811	482,411	1,013,134
Lincoln	296,914	164,402	340,858	10,405	16,258	26,590
Wentworth	324,450	252,601	497,243	10,308	13,557	30,802
Halton	400,640	188,326	377,926	37,594	44,201	45,383
Peel	383,016	306,248	497,543	123,578	171,299	184,266
York	564,785	537,556	726,919	282,073	423,033	397,163
Ontario	83,038	109,791	193,986	600,793	823,569	732,356
Durham	75,287	71,331	65,577	343,816	402,102	556,624
Northumberland	209,572	273,416	201,832	179,484	242,002	348,640
Prince Edward	37,055	21,748	32,110	34,703	52,073	78,582
Totals	2,374,757	1,925,419	2,933,994	1,622,754	2,188,094	2,400,406
Lennox and Addington	43,790	22,327	32,726	31,271	33,638	78,414
Frontenac	13,478	13,063	30,387	81,218	126,627	117,153
Leeds and Grenville	60,307	60,765	87,493	108,721	182,851	188,655
Dundas	6,398	3,827	19,730	45,327	93,139	77,238
Stormont	2,184	4,270	11,452	51,286	99,443	72,622
Glengarry	1,655	3,633	9,393	91,597	137,839	115,103
Prescott	.....	845	877	71,723	159,355	113,242
Russell	3,748	3,548	3,895	42,481	60,917	61,249
Carleton	5,902	6,763	21,670	308,226	374,219	334,806
Renfrew	4,464	2,742	16,671	404,856	309,278	305,977
Lanark	62,596	33,263	57,605	137,422	214,380	194,085
Totals	204,522	155,046	291,899	1,374,128	1,791,686	1,718,544
Victoria	67,723	143,290	152,870	321,422	356,525	434,367
Peterborough	141,962	196,947	185,387	245,963	247,950	305,850
Haliburton	2,845	3,517	1,735	17,971	18,478	15,217
Hastings	233,593	146,858	124,427	103,829	113,453	212,328
Totals	446,123	490,612	494,419	689,185	736,406	967,762
Muskoka	1,640	1,881	1,082	10,616	12,512	18,760
Parry Sound	398	.....	558	6,567	6,457	20,970
Algoma	7,173	11,667	7,577	83,729	84,939	112,254
Totals	9,211	13,548	9,217	100,912	103,908	151,984
The Province	11,493,648	14,162,726	16,033,528	5,019,680	6,408,384	7,828,330

VALUES—BARLEY AND OATS.

TABLE No. VI.—Showing by County Municipalities and groups of Counties the value at market prices of the total crop of Barley and Oats in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9.

Counties.	Barley.			Oats.		
	1889.	1888.	1882-9.	1889.	1888.	1882-9.
	$	$	$	$	$	$
Essex	45,480	74,539	40,942	353,601	659,627	411,341
Kent	111,091	163,360	98,893	425,705	618,958	471,954
Elgin	50,072	90,687	67,607	359,753	668,684	447,778
Norfolk	61,844	120,218	89,893	217,625	434,338	312,986
Haldimand	126,548	246,022	185,025	243,416	471,981	276,283
Welland	29,532	52,594	50,788	204,537	345,975	225,693
Totals	424,567	747,420	533,148	1,804,637	3,199,563	2,145,985
Lambton	171,339	316,418	215,475	458,485	823,683	517,947
Huron	379,110	542,151	421,032	974,191	1,399,689	1,007,582
Bruce	212,832	359,097	279,813	591,517	923,982	687,523
Totals	763,281	1,217,666	916,320	2,024,193	3,147,354	2,213,052
Grey	194,975	283,482	320,093	1,039,745	1,239,275	982,663
Simcoe	480,549	558,945	448,444	879,850	913,998	761,882
Totals	675,524	842,427	768,537	1,919,595	2,153,273	1,744,545
Middlesex	177,871	310,974	226,015	937,841	1,479,942	992,739
Oxford	228,622	386,728	288,075	699,433	1,018,799	729,279
Brant	315,010	433,095	283,034	204,789	290,790	236,967
Perth	237,910	350,965	292,410	825,606	1,214,182	813,279
Wellington	580,939	770,954	562,993	1,079,374	1,265,181	916,521
Waterloo	302,261	412,169	282,426	461,573	655,850	475,144
Dufferin	152,341	239,307	167,856	363,962	527,534	353,862
Totals	1,994,954	2,904,192	2,102,809	4,572,578	6,452,278	4,517,791
Lincoln	51,418	85,289	61,782	163,019	308,631	215,673
Wentworth	191,893	325,581	205,094	289,543	540,246	381,170
Halton	213,498	297,648	210,333	254,791	324,222	244,506
Peel	588,113	767,587	550,960	436,446	560,561	390,043
York	948,234	1,386,665	946,999	888,404	1,267,335	900,264
Ontario	645,144	959,137	633,389	744,749	989,461	670,326
Durham	674,200	913,795	721,091	406,177	525,263	432,016
Northumberland	513,980	549,959	585,955	315,024	337,114	315,364
Prince Edward	468,010	512,645	472,275	122,294	148,330	131,798
Totals	4,294,490	5,798,306	4,387,878	3,620,447	5,001,163	3,681,160
Lennox and Addington	418,027	371,920	503,246	226,042	191,005	224,090
Frontenac	181,293	218,441	241,734	281,699	293,320	279,518
Leeds and Grenville	109,720	168,855	156,109	680,801	954,637	743,351
Dundas	60,120	115,679	115,507	298,190	533,549	378,824
Stormont	21,711	33,471	36,266	217,202	351,434	303,113
Glengarry	25,651	37,618	28,369	265,473	356,428	347,935
Prescott	47,867	83,965	41,140	234,963	368,672	285,527
Russell	23,267	21,083	19,508	168,900	217,434	203,433
Carleton	119,345	178,807	127,166	659,092	929,707	748,182
Renfrew	28,164	20,668	19,449	601,231	398,304	456,679
Lanark	48,098	54,559	41,392	383,636	386,084	402,331
Totals	1,083,263	1,305,066	1,329,886	4,017,229	4,980,574	4,372,983
Victoria	441,651	595,176	438,834	515,951	567,382	454,030
Peterborough	165,132	185,966	188,460	372,110	331,586	329,972
Haliburton	3,074	3,334	3,708	66,167	50,209	48,248
Hastings	429,311	423,372	521,854	488,440	382,587	435,509
Totals	1,039,168	1,207,848	1,152,856	1,442,668	1,331,764	1,267,759
Muskoka	4,128	5,829	6,369	104,438	100,995	89,395
Parry Sound	4,421	4,313	8,129	50,074	56,885	49,947
Algoma	6,215	10,241	8,312	69,763	90,250	55,971
Totals	14,764	20,383	22,810	224,275	248,130	195,313
The Province	10,290,011	14,043,308	11,214,244	19,625,622	26,514,099	20,138,588

VALUES—RYE AND PEASE.

TABLE No. VII.—Showing by County Municipalities and groups of Counties the value at market prices of the total crop of Rye and Pease in Ontario in the years 1888 and 1889, with the yearly average for the eight years 1882-9.

Counties.	Rye.			Pease.		
	1889.	1888.	1882-9.	1889.	1888.	1882-9.
	$	$	$	$	$	$
Essex	8,065	12,042	9,384	33,071	59,985	44,072
Kent	9,026	11,159	7,761	137,278	214,121	123,181
Elgin	18,016	25,473	14,024	128,301	242,520	139,275
Norfolk	39,117	85,055	60,690	209,521	282,338	177,567
Haldimand	2,380	5,126	8,508	137,683	236,923	151,388
Welland	5,416	6,689	6,588	46,923	63,911	43,294
Totals	82,020	145,544	106,955	692,777	1,099,798	678,777
Lambton	2,819	3,329	2,161	100,335	190,535	107,612
Huron	1,771	2,131	2,736	400,228	548,606	430,094
Bruce	4,449	6,863	4,163	406,827	543,570	507,296
Totals	9,039	12,323	9,060	907,390	1,282,711	1,045,002
Grey	4,164	5,063	5,637	637,103	564,330	601,215
Simcoe	22,396	23,743	25,160	415,581	371,469	411,271
Totals	26,560	28,806	30,797	1,052,684	935,799	1,012,486
Middlesex	4,729	6,518	4,762	232,385	463,404	257,686
Oxford	13,552	17,111	10,920	147,971	337,482	200,863
Brant	9,342	17,391	8,757	128,419	139,753	108,278
Perth	448	406	1,779	235,319	480,446	316,232
Wellington	7,710	11,845	9,003	434,428	610,817	515,892
Waterloo	2,490	5,671	5,428	166,410	287,166	194,648
Dufferin	1,758	5,888	8,132	157,477	178,006	148,124
Totals	40,029	64,830	48,781	1,502,409	2,497,074	1,741,723
Lincoln	1,196	1,343	3,967	50,053	73,125	52,122
Wentworth	8,693	12,720	10,143	124,077	205,136	131,213
Halton	4,225	4,455	5,060	114,709	169,410	136,291
Peel	7,291	11,667	16,805	155,434	241,540	170,124
York	14,174	15,464	17,488	360,949	531,837	379,514
Ontario	15,187	20,966	30,041	288,647	410,370	338,761
Durham	33,296	36,587	45,726	187,049	220,357	258,220
Northumberland	69,782	75,355	90,842	216,529	129,821	206,847
Prince Edward	79,713	69,754	75,298	189,897	162,922	127,357
Totals	233,557	248,311	295,370	1,687,344	2,144,518	1,800,449
Lennox and Addington	31,535	22,577	45,426	97,598	62,967	97,463
Frontenac	27,776	23,767	37,801	75,596	86,919	120,430
Leeds and Grenville	16,218	14,004	68,491	56,574	69,977	74,987
Dundas	9,131	9,449	19,566	10,455	23,441	22,928
Stormont	2,138	2,889	6,000	10,577	35,790	33,061
Glengarry		162	569	26,201	50,696	65,923
Prescott	1,705	2,104	3,035	29,740	72,077	88,642
Russell	120	217	2,567	15,616	19,851	45,263
Carleton	41,285	33,838	66,653	152,321	136,336	172,011
Renfrew	64,621	38,356	76,038	314,691	198,343	258,298
Lenark	22,212	15,380	54,651	144,823	93,216	149,665
Totals	216,741	162,743	380,797	934,192	849,613	1,128,671
Victoria	12,245	12,317	11,878	196,941	159,265	197,454
Peterborough	14,251	19,343	29,303	177,568	94,665	171,916
Haliburton	1,342	1,124	2,516	16,621	13,478	17,883
Hastings	84,152	75,895	130,701	234,319	125,470	191,842
Totals	111,990	108,679	174,398	625,449	392,878	579,095
Muskoka	2,258	2,635	4,457	34,200	33,428	33,719
Parry Sound	1,637	1,355	4,372	15,288	21,674	17,396
Algoma	4,894	4,546	2,057	72,912	74,997	58,293
Totals	8,789	8,536	10,886	122,400	130,099	109,408
The Province	728,725	779,772	1,057,044	7,524,645	9,332,490	8,095,611

VALUES—CORN, BUCKWHEAT AND BEANS.

TABLE No. VIII.—Showing by County Municipalities and groups of Counties the value at market prices [illegible] of the total crop of Corn, Buckwheat and Beans in Ontario in the years 1888 and 1889, with the yearly average for the five years 1885-9.

Counties.	Corn.			Buckwheat.			Beans.		
	1889.	1888.	1885-9.	1889.	1888.	1885-9.	1889.	1888.	1885-9.
	$	$	$	$	$	$	$	$	$
Essex	286,804	959,004	613,849	3,775	7,782	6,876	8,874	11,051	10,650
Kent	285,022	684,716	464,559	4,433	6,628	6,748	242,435	368,064	238,850
Elgin	166,447	449,658	280,895	10,475	11,073	10,284	23,906	25,843	20,724
Norfolk	171,853	399,051	238,348	28,302	42,317	35,350	7,412	7,277	6,338
Haldimand	32,434	80,326	35,204	6,751	8,346	5,941	3,636	5,086	2,220
Welland	67,378	182,646	106,850	11,084	17,727	13,650	8,139	10,665	7,328
Totals	1,009,938	2,755,401	1,739,705	64,820	93,873	78,849	294,402	427,986	286,110
Lambton	66,288	210,671	116,753	2,323	3,275	3,103	5,166	7,504	6,278
Huron	24,476	49,460	29,414	967	1,013	1,905	3,370	4,639	3,199
Bruce	13,610	18,002	11,055	1,848	1,188	2,652	2,439	2,749	2,247
Totals	104,374	278,133	157,222	5,138	5,476	7,660	10,975	14,892	11,724
Grey	9,468	12,042	7,392	1,366	2,058	2,326	2,002	1,567	1,693
Simcoe	15,503	22,920	13,039	1,628	1,731	2,221	3,446	2,340	2,291
Totals	24,971	34,962	20,431	2,994	3,789	4,547	5,448	3,907	3,984
Middlesex	131,931	322,960	188,897	3,448	4,115	4,124	6,044	7,220	4,824
Oxford	94,634	231,925	138,311	3,332	3,579	3,984	5,676	7,163	4,575
Brant	82,517	138,193	85,346	3,657	5,927	4,757	868	1,235	2,182
Perth	8,630	24,221	12,550	508	473	849	1,824	1,904	1,256
Wellington	10,736	14,817	8,922	1,195	1,164	936	1,242	1,023	888
Waterloo	16,690	23,654	15,815	218	355	672	661	853	713
Dufferin	1,554	1,743	1,252	469	850	997	532	478	475
Totals	346,692	757,513	451,093	12,827	16,463	16,319	16,847	19,876	14,913
Lincoln	76,990	203,979	115,430	3,830	6,315	4,751	3,852	5,221	3,063
Wentworth	69,653	120,951	78,304	3,540	9,266	5,835	2,680	3,650	2,262
Halton	25,797	38,418	18,615	1,373	1,094	1,046	1,064	978	927
Peel	21,776	12,995	10,139	2,649	2,817	1,902	1,552	1,273	986
York	27,367	42,041	25,004	1,549	2,241	1,633	3,274	3,766	2,854
Ontario	40,143	81,243	41,180	5,617	5,817	4,316	1,996	2,431	2,520
Durham	35,212	28,414	23,484	15,841	21,156	13,136	1,964	7,187	5,009
Northumberland	66,837	80,374	54,866	55,666	56,584	53,149	10,675	14,324	9,189
Prince Edward	85,208	132,753	70,907	46,183	114,413	69,858	11,289	10,716	8,940
Totals	448,983	741,168	437,929	136,248	219,703	155,626	41,346	49,546	35,750
Lennox and Add	48,570	46,959	33,184	26,848	21,660	25,276	2,882	2,327	2,530
Frontenac	27,065	33,032	24,315	13,787	14,873	14,417	6,246	6,053	7,139
Leeds & Grenville	129,420	152,821	98,346	49,083	40,835	45,102	7,083	9,228	7,398
Dundas	26,938	48,121	30,367	15,288	21,562	17,145	13,992	9,642	7,212
Stormont	18,081	23,680	18,292	14,671	18,720	20,708	7,640	6,140	4,046
Glengarry	13,569	9,177	8,979	10,629	11,398	7,881	1,882	1,961	1,745
Prescott	20,240	25,777	20,225	10,940	13,043	12,282	12,946	13,379	9,811
Russell	5,047	4,993	4,388	7,470	6,210	7,666	2,335	3,260	3,039
Carleton	26,571	25,070	19,248	43,247	28,347	33,341	11,261	8,291	8,483
Renfrew	5,785	4,096	5,516	5,972	7,836	10,249	15,670	9,151	10,638
Lanark	22,395	18,112	15,961	37,824	29,701	40,142	7,584	6,588	4,758
Totals	343,681	391,838	278,821	235,759	214,185	234,209	89,521	76,020	66,799
Victoria	16,259	20,698	11,300	5,589	2,899	2,663	1,546	1,762	1,279
Peterborough	4,930	4,594	4,632	4,752	4,509	5,719	874	682	1,316
Haliburton	1,233	1,157	1,252	1,435	1,227	1,237	697	546	516
Hastings	89,887	119,220	73,217	29,632	37,507	35,741	6,910	10,497	6,086
Totals	112,309	145,669	90,401	41,408	46,142	45,360	10,027	13,487	9,197
Muskoka	2,590	1,846	2,137	2,656	2,067	2,729	1,495	1,019	930
Parry Sound	315	410	413	154	128	617	215	227	174
Algoma	1,430	2,036	955	664	759	566	912	796	393
Totals	4,335	4,292	3,505	3,474	2,954	3,912	2,622	2,042	1,497
The Province	2,395,283	5,108,976	3,179,107	502,668	602,585	546,482	471,188	607,756	429,974

VALUES—HAY AND CLOVER AND POTATOES.

TABLE No. IX.—Showing by County Municipalities and groups of Counties the value at market prices of the total crop of Hay and Clover and Potatoes in Ontario in the years 1888 and 1889, with the yearly average for the five years 1885-9.

Counties.	Hay and Clover.			Potatoes.		
	1889.	1888.	1885-9.	1889.	1888.	1885-9.
	$	$	$	$	$	$
Essex	767,592	931,048	695,912	59,564	130,981	101,393
Kent	1,022,970	1,116,980	904,659	94,203	146,815	131,098
Elgin	1,059,636	988,346	845,957	69,146	154,093	103,508
Norfolk	675,995	400,138	536,195	66,167	129,985	93,323
Haldimand	706,694	465,591	665,101	34,664	77,099	61,882
Welland	841,444	498,008	658,629	57,078	94,569	77,028
Totals	5,074,331	4,400,111	4,306,453	380,822	733,542	568,232
Lambton	976,104	976,399	882,503	62,010	144,128	108,093
Huron	1,650,712	1,571,876	1,512,695	214,293	211,423	250,575
Bruce	1,363,138	1,522,548	1,253,278	200,838	240,188	234,494
Totals	3,989,954	4,070,823	3,648,476	477,141	595,739	593,162
Grey	1,814,274	1,751,158	1,551,764	296,011	329,648	372,623
Simcoe	1,272,919	1,133,974	1,070,400	339,903	355,771	359,293
Totals	3,087,193	2,885,132	2,622,164	635,914	685,419	731,916
Middlesex	1,642,908	1,748,200	1,467,764	118,118	265,115	202,709
Oxford	1,061,872	1,141,059	1,006,452	95,029	191,982	121,442
Brant	522,892	255,914	419,467	73,369	94,099	91,455
Perth	1,106,213	1,404,559	1,113,893	83,882	186,991	157,085
Wellington	1,308,398	1,312,821	1,335,502	279,270	272,581	284,283
Waterloo	624,119	845,827	683,327	99,377	151,140	135,208
Dufferin	539,529	400,639	455,472	141,861	189,834	172,462
Totals	6,805,931	7,109,019	6,481,877	890,906	1,351,742	1,164,644
Lincoln	650,396	475,266	607,505	45,643	94,909	72,822
Wentworth	747,282	616,582	632,666	107,403	157,883	151,229
Halton	502,962	285,072	436,879	56,234	76,647	68,351
Peel	580,966	320,565	531,858	107,171	137,467	116,305
York	1,113,818	811,254	1,011,126	357,283	423,204	321,816
Ontario	857,971	620,409	769,270	229,762	282,168	222,547
Durham	681,794	478,140	609,800	173,807	142,376	158,123
Northumberland	818,979	614,811	725,479	186,704	192,461	177,724
Prince Edward	525,167	204,480	428,998	68,662	104,120	94,436
Totals	6,479,335	4,426,579	5,753,581	1,332,669	1,611,235	1,383,353
Lennox and Addington	779,468	435,312	621,511	144,138	98,527	156,343
Frontenac	1,017,721	490,221	726,203	117,882	159,702	149,346
Leeds and Grenville	1,917,038	1,291,566	1,609,250	225,907	303,223	353,849
Dundas	657,343	827,195	650,722	75,945	88,135	131,799
Stormont	679,119	835,483	606,703	39,724	80,839	95,388
Glengarry	849,029	1,056,256	734,731	45,586	94,149	111,777
Prescott	546,764	802,682	547,029	100,857	139,797	136,243
Russell	235,837	286,059	259,861	58,455	34,569	62,112
Carleton	766,833	1,064,878	933,248	411,279	249,784	322,684
Renfrew	787,362	573,136	703,119	327,645	141,531	250,386
Lanark	931,154	674,416	926,152	213,585	126,175	198,719
Totals	9,167,668	8,337,204	8,318,529	1,761,003	1,516,431	1,968,646
Victoria	501,894	386,485	461,866	246,471	152,825	175,193
Peterborough	497,703	322,236	428,170	197,490	82,211	134,773
Haliburton	104,111	152,195	120,252	39,815	21,178	33,595
Hastings	959,298	784,484	875,251	326,630	199,771	287,424
Totals	2,063,006	1,645,400	1,885,539	810,406	455,985	630,985
Muskoka	241,716	371,714	291,638	115,499	55,776	85,371
Parry Sound	131,017	110,670	106,286	62,002	21,249	49,119
Algoma	168,413	214,022	140,836	65,404	33,615	55,830
Totals	541,146	696,406	538,760	242,905	110,640	190,320
The Province	37,208,564	33,570,674	33,555,379	6,531,766	7,060,733	7,231,258

VALUES—CARROTS AND TURNIPS.

TABLE NO. X.—Showing by County Municipalities and groups of Counties the value at market prices of the total crop of Carrots and Turnips in Ontario in the years 1888 and 1889, with the yearly average for the five years 1885-9.

Counties.	Carrots.			Turnips.		
	1889.	1888.	1885-9.	1889.	1888.	1885-9.
	$	$	$	$	$	$
Essex	3,440	6,539	6,639	4,947	7,945	11,887
Kent	8,641	12,746	13,542	19,689	18,484	24,307
Elgin	14,393	18,524	14,245	25,822	34,142	25,904
Norfolk	13,104	17,724	11,239	99,513	151,280	99,394
Haldimand	8,526	11,784	7,891	15,769	20,457	9,535
Welland	7,609	11,770	7,731	11,895	16,557	13,855
Totals	55,713	79,087	61,287	177,635	248,865	184,882
Lambton	16,507	24,134	16,921	17,282	32,179	19,360
Huron	42,981	48,234	48,308	484,689	551,434	608,674
Bruce	18,590	24,071	23,202	405,149	489,967	546,106
Totals	78,078	96,439	88,431	907,120	1,073,580	1,174,140
Grey	37,969	37,466	48,018	668,679	696,412	837,847
Simcoe	56,770	49,475	54,250	365,580	316,048	330,884
Totals	94,739	86,941	102,268	1,034,259	1,012,460	1,168,731
Middlesex	33,586	41,819	39,386	101,779	186,170	143,461
Oxford	41,186	50,100	35,573	369,339	625,093	538,548
Brant	16,757	27,916	22,037	198,509	373,463	296,148
Perth	22,866	36,339	41,940	219,602	366,882	391,595
Wellington	17,810	23,115	22,924	994,903	1,205,613	1,272,160
Waterloo	36,022	41,506	34,047	284,659	481,653	456,777
Dufferin	13,118	9,105	12,643	211,582	171,943	201,488
Totals	181,345	229,900	208,550	2,380,373	3,410,817	3,300,177
Lincoln	9,986	18,113	10,938	20,253	29,137	19,816
Wentworth	14,469	26,725	21,424	223,013	367,595	293,348
Halton	17,035	19,971	14,668	111,209	236,190	180,326
Peel	25,908	33,977	24,719	116,140	138,462	110,602
York	62,072	77,910	70,327	301,141	381,325	318,688
Ontario	48,366	66,923	53,317	1,154,318	1,242,547	1,169,200
Durham	66,414	54,152	51,583	492,439	502,448	527,815
Northumberland	38,615	34,680	26,212	359,609	300,877	322,570
Prince Edward	5,160	10,945	4,150	3,967	12,376	6,789
Totals	288,025	343,396	277,338	2,782,089	3,210,957	2,949,154
Lennox and Addington	5,670	5,395	4,928	4,976	4,394	7,677
Frontenac	15,980	15,759	14,555	27,448	27,608	33,002
Leeds and Grenville	16,424	15,785	13,683	24,957	22,957	20,266
Dundas	3,490	6,693	4,133	4,674	5,970	3,722
Stormont	6,634	3,457	2,709	3,648	2,787	4,644
Glengarry	3,634	3,323	3,104	1,180	1,997	4,200
Prescott	3,481	4,434	4,198	7,883	9,874	11,853
Russell	15,124	13,909	12,526	38,961	27,290	29,592
Carleton	47,507	33,073	41,592	142,449	102,761	117,126
Renfrew	7,494	3,015	6,824	56,528	30,351	43,968
Lanark	10,000	7,323	10,015	52,531	43,171	41,328
Totals	135,438	112,166	118,267	365,235	279,160	317,378
Victoria	41,564	44,617	35,541	333,518	369,569	328,369
Peterborough	30,721	26,991	25,748	150,605	88,778	102,638
Haliburton	1,262	1,541	1,893	25,025	19,455	22,519
Hastings	16,897	15,707	15,681	97,993	71,997	69,075
Totals	90,444	88,856	78,863	607,141	549,799	522,601
Muskoka	8,966	4,776	5,865	110,078	53,301	82,494
Parry Sound	1,583	1,222	1,982	48,292	40,966	44,633
Algoma	2,594	2,037	2,409	28,625	30,264	36,312
Totals	13,143	8,035	10,256	186,995	123,531	163,439
The Province	936,925	1,044,820	945,260	8,440,847	9,909,169	9,780,502

VALUES—WHEAT TO PEASE AND CORN TO TURNIPS.

TABLE NO. XI.—Showing by County Municipalities and groups of Counties the aggregate value of Wheat, Barley, Oats, Rye and Pease, and of Corn, Buckwheat, Beans, Hay, Potatoes, Carrots and Turnips in Ontario in 1888 and 1889, with the yearly average of the first group for eight years 1882-9 and for the second group for five years 1885-9.

Counties.	Wheat, Barley, Oats, Rye and Pease.			Corn, Buckwheat, Beans, Hay and Clover, Potatoes, Carrots and Turnips.		
	1889.	1888.	1882-9.	1889.	1888.	1885-9.
	$	$	$	$	$	$
Essex	854,789	1,503,315	1,087,255	1,134,996	2,054,350	1,447,206
Kent	1,458,893	2,262,431	1,779,303	1,677,393	2,354,433	1,783,763
Elgin	1,118,912	1,817,826	1,443,255	1,369,825	1,681,679	1,301,517
Norfolk	940,435	1,456,116	1,164,270	1,062,346	1,147,772	1,020,187
Haldimand	955,667	1,362,683	1,123,916	808,474	668,689	787,774
Welland	540,113	748,050	657,203	1,004,627	831,942	885,071
Totals	5,868,809	9,150,421	7,255,202	7,057,661	8,738,865	7,225,518
Lambton	1,292,420	2,076,506	1,508,452	1,145,680	1,398,290	1,153,011
Huron	2,420,543	3,464,778	3,220,593	2,421,488	2,438,079	2,454,770
Bruce	1,723,978	2,626,644	2,462,600	2,005,612	2,298,713	2,073,034
Totals	5,436,941	8,167,928	7,191,645	5,572,780	6,135,082	5,680,815
Grey	2,422,959	2,896,114	2,928,434	2,829,769	2,830,351	2,821,663
Simcoe	3,083,224	3,361,090	3,140,166	2,055,749	1,882,259	1,832,378
Totals	5,506,183	6,257,204	6,068,600	4,885,518	4,712,610	4,654,041
Middlesex	2,146,396	3,438,849	2,881,305	2,037,814	2,575,599	2,051,163
Oxford	1,626,986	2,488,635	2,033,070	1,671,068	2,250,901	1,848,885
Brant	961,498	1,208,667	1,128,479	898,569	896,747	921,392
Perth	1,794,955	2,709,569	2,362,049	1,443,525	2,021,369	1,719,168
Wellington	2,434,978	3,111,041	2,728,661	2,613,554	2,831,134	2,925,615
Waterloo	1,477,561	2,000,216	1,743,133	1,061,746	1,544,988	1,326,559
Dufferin	929,666	1,364 919	1,117,257	908,645	774,592	844,789
Totals	11,372,040	16,321,896	13,993,954	10,634,921	12,895,330	11,637,573
Lincoln	573,005	649,048	700,992	810,950	832,940	834,328
Wentworth	948,964	1,349,841	1,255,665	1,168,040	1,302,652	1,185,068
Halton	1,025,457	1,028,262	1,019,499	715,674	658,370	720,812
Peel	1,693,878	2,058,902	1,809,741	856,162	647,506	796,511
York	3,058,619	4,161,890	3,368,347	1,866,504	1,741,741	1,751,448
Ontario	2,377,558	3 313,294	2,598,859	2,338,173	2,301,538	2,262,260
Durham	1,719,825	2,169,435	2,079,254	1,470,471	1,233,873	1,388,960
Northumberland	1,504,371	1,607,667	1,749,480	1,537,085	1,294,111	1,369,189
Prince Edward	931,672	967,472	917,420	745,636	589,803	684,678
Totals	13,833,349	17,305,811	15,499,257	11,508,695	10,602,584	10,992,731
Lennox and Addington	848,263	704,434	981,365	1,012,552	614,574	851,449
Frontenac	661,060	762,137	827,023	1,226,129	747,248	868,977
Leeds and Grenville	1,032,341	1,451,089	1,319,086	2,369,912	1,836,415	2,147,894
Dundas	429,621	779,084	633,793	797,670	1,007,318	845,100
Stormont	305,098	527,297	462,514	769,517	971,106	752,490
Glengarry	410,577	586,376	567,292	925,509	1,178,261	872,417
Prescott	385,998	687,018	532,463	703,111	1,008,986	741,641
Russell	254,132	323,050	335,915	363,229	376,290	379,184
Carleton	1,286,171	1,659,670	1,470,488	1,449,147	1,512,204	1,475,722
Renfrew	1,418,027	967,691	1,193,112	1,206,456	769,116	1,030,700
Lanark	798,787	796,882	899,729	1,275,073	905,486	1,237,075
Totals	7,830,075	9,244,728	9,222,780	12,098,305	10,927,004	11,302,649
Victoria	1,555,933	1,833,955	1,689,433	1,146,841	978,855	1,016,211
Peterborough	1,116,986	1,076,457	1,210,888	887,075	530,001	702,996
Haliburton	108,020	90,140	89,307	173,578	197,299	181,264
Hastings	1,573,644	1,267,635	1,646,661	1,527,247	1,239,183	1,362,475
Totals	4,354,583	4,268,187	4,636,289	3,734,741	2,945,338	3,262,946
Muskoka	157,280	157,280	153,782	483,000	489,499	471,164
Parry Sound	78,385	90,684	101,372	243,578	174,872	203,224
Algoma	244,686	276,640	244,464	268,042	283,529	237,301
Totals	480,351	524,604	499,618	994,620	947,900	911,689
The Province	54,682,331	71,240,779	64,367,345	56,487,241	57,904,713	55,667,962

VALUES—ALL FIELD CROPS AND WOOL.

TABLE No. XII.—Showing by County (Municipalities and groups of Counties the aggregate value of all field crops in Ontario in the years 1888 and 1889, with the yearly average (determined by combining averages in preceding table); also the value, at market price, of the total clip of Wool in 1888 and 1889, with the yearly average for five years 1885-9.

Counties.	All field crops.			Wool.		
	1889.	1888.	Yearly average.	1889.	1888.	1885-9.
	$	$	$	$	$	$
Essex	1,989,785	3,557,665	2,534,461	15,883	15,740	16,450
Kent	3,136,286	4,616,864	3,563,066	20,512	20,796	20,962
Elgin	2,488,737	3,499,505	2,744,772	22,508	23,322	21,554
Norfolk	2,002,781	2,603,888	2,184,457	13,803	13,873	15,348
Haldimand	1,764,141	2,031,372	1,911,690	15,482	16,098	18,891
Welland	1,544,740	1,579,992	1,542,274	12,247	12,784	14,090
Totals	12,926,470	17,889,286	14,480,720	100,435	102,613	107,295
Lambton	2,438,100	3,474,796	2,661,463	24,437	23,743	24,456
Huron	4,842,031	5,902,857	5,675,363	46,827	46,732	49,501
Bruce	3,729,590	4,925,357	4,535,634	56,124	51,863	52,648
Totals	11,009,721	14,303,010	12,872,460	127,388	122,338	126,605
Grey	5,252,728	5,726,465	5,750,097	74,551	71,618	74,095
Simcoe	5,138,973	5,243,349	4,972,544	47,187	46,887	50,007
Totals	10,391,701	10,969,814	10,722,641	121,738	118,505	124,102
Middlesex	4,184,210	6,014,448	4,932,470	35,577	35,187	36,541
Oxford	3,298,054	4,739,536	3,881,955	16,886	17,323	18,614
Brant	1,860,067	2,105,414	2,049,871	11,715	11,698	13,636
Perth	3,238,480	4,730,938	4,081,217	30,899	30,273	32,564
Wellington	5,048,532	5,942,175	5,654,276	48,799	48,235	50,481
Waterloo	2,539,307	3,545,204	3,069,692	19,882	20,570	21,973
Dufferin	1,838,311	2,139,511	1,962,046	18,928	18,408	19,398
Totals	22,006,961	29,217,226	25,631,527	182,686	181,694	193,207
Lincoln	1,383,955	1,481,988	1,535,317	8,714	9,159	9,789
Wentworth	2,117,004	2,652,493	2,440,733	13,745	15,284	15,357
Halton	1,741,131	1,686,632	1,740,311	11,806	12,171	13,207
Peel	2,550,040	2,706,458	2,606,252	17,492	18,054	19,326
York	4,925,123	5,903,631	5,119,795	25,376	28,636	30,786
Ontario	4,715,731	5,614,832	4,861,209	29,890	29,530	30,698
Durham	3,190,296	3,403,308	3,468,204	21,257	21,879	22,682
Northumberland	3,041,456	2,901,778	3,118,669	20,430	21,706	22,900
Prince Edward	1,677,308	1,557,275	1,601,498	7,748	8,394	8,789
Totals	25,342,044	27,908,395	26,491,988	156,458	164,813	173,534
Lennox and Addington	1,860,815	1,319,008	1,832,814	10,639	12,293	14,749
Frontenac	1,887,189	1,509,385	1,796,000	13,563	14,649	16,893
Leeds and Grenville	3,402,253	3,287,504	3,466,980	26,857	28,175	32,184
Dundas	1,227,291	1,786,402	1,478,893	8,136	8,558	9,849
Stormont	1,074,615	1,498,403	1,215,004	9,156	9,542	9,916
Glengarry	1,336,086	1,764,637	1,439,709	11,699	12,077	13,308
Prescott	1,089,109	1,696,004	1,274,104	10,928	10,404	10,659
Russell	617,361	699,340	715,099	5,590	5,859	7,011
Carleton	2,735,318	3,171,874	2,946,210	26,746	27,160	27,553
Renfrew	2,624,483	1,736,807	2,223,812	35,757	34,987	33,346
Lanark	2,073,860	1,702,368	2,136,804	26,060	26,130	30,183
Totals	19,928,380	20,171,732	20,525,429	185,131	189,834	205,651
Victoria	2,702,774	2,812,810	2,705,644	20,241	21,432	23,111
Peterborough	2,004,061	1,606,458	1,913,884	15,312	15,767	16,576
Haliburton	281,598	287,439	270,571	3,285	3,015	3,160
Hastings	3,100,891	2,506,818	3,009,136	21,487	23,214	24,201
Totals	8,089,324	7,213,525	7,899,235	60,325	63,428	67,048
Muskoka	640,280	646,779	624,946	7,079	6,212	6,629
Parry Sound	321,963	265,556	304,596	3,160	2,781	2,590
Algoma	512,728	560,169	481,765	5,501	4,752	4,359
Totals	1,474,971	1,472,504	1,411,307	15,740	13,745	13,578
The Province	111,169,572	129,145,492	120,035,307	949,901	956,970	1,011,020

VALUE PER ACRE—FALL WHEAT, SPRING WHEAT AND BARLEY.

TABLE No. XIII.—Showing by County Municipalities and groups of Counties, the market value of crop per acre of Wheat and Barley in Ontario in 1888 and 1889 with the yearly average for eight years 1882-9.

Counties.	Fall Wheat.			Spring Wheat.			Barley.		
	1889.	1888.	1882-9.	1889.	1888.	1882-9.	1889.	1888.	1882-9
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Essex	13 88	22 84	17 67	11 63	17 87	13 20	10 60	17 97	14 87
Kent	12 91	20 89	17 18	15 42	18 17	13 53	12 36	18 69	15 25
Elgin	14 41	18 02	17 12	13 30	17 18	12 44	11 57	19 95	15 38
Norfolk	12 91	15 87	15 55	12 07	14 50	12 09	9 64	17 85	14 54
Haldimand	12 73	11 26	14 15	10 75	17 77	12 13	9 72	18 45	12 85
Welland	13 17	12 39	13 93	9 16	14 60	11 80	9 72	18 03	13 28
Group	13 32	17 54	16 23	12 79	17 49	12 62	10 60	18 49	14 02
Lambton	14 76	18 43	16 84	11 72	15 69	12 20	11 18	21 16	14 77
Huron	11 93	16 90	17 15	11 54	14 00	11 52	11 53	17 13	15 40
Bruce	11 40	17 20	16 98	10 66	15 69	11 97	9 81	15 45	14 41
Group	12 59	17 43	17 02	10 98	15 38	11 79	10 92	17 43	14 94
Grey	11 58	19 15	17 85	10 92	16 09	12 76	9 68	13 34	13 71
Simcoe	15 82	20 48	18 75	12 86	16 98	13 65	11 92	13 34	14 28
Group	14 50	20 05	18 45	12 03	16 59	13 17	11 18	13 34	14 04
Middlesex	13 08	16 79	17 31	13 39	14 49	12 32	10 82	19 47	14 97
Oxford	15 03	18 12	17 34	14 36	15 29	13 57	12 32	20 19	16 87
Brant	14 14	12 80	16 09	13 83	12 71	11 54	12 45	16 95	15 17
Perth	11 85	16 08	17 16	15 15	11 62	12 64	13 42	20 19	16 59
Wellington	13 44	17 41	17 73	13 39	16 09	12 75	13 42	17 49	15 64
Waterloo	14 94	17 51	18 09	14 10	19 86	12 86	14 21	19 59	17 04
Dufferin	12 46	15 87	17 19	10 22	17 18	12 70	10 65	15 81	14 03
Group	13 60	16 59	17 31	11 67	16 37	12 75	12 72	18 34	15 81
Lincoln	15 82	8 60	15 75	11 72	18 37	12 78	10 08	17 55	14 22
Wentworth	13 70	9 22	16 14	11 36	15 99	12 72	11 13	20 79	15 73
Halton	19 62	10 96	17 13	14 80	20 26	13 58	13 29	18 21	15 77
Peel	16 80	15 36	18 75	14 01	21 75	15 21	12 80	16 53	15 48
York	18 92	20 28	19 60	13 74	22 34	15 53	13 73	19 17	16 32
Ontario	15 65	23 45	20 22	14 45	21 75	15 78	13 02	18 51	16 02
Durham	13 44	22 63	18 23	13 48	19 26	15 19	12 32	14 84	15 09
Northumberland	11 67	22 94	18 18	9 87	13 70	12 73	10 03	10 34	12 57
Prince Edward	19 89	18 94	15 36	9 34	15 09	12 09	10 69	11 42	11 44
Group	16 24	14 69	17 83	13 23	19 79	14 77	12 18	15 79	14 65
Lennox and Addington	16 53	13 82	15 73	11 63	12 81	13 29	10 87	10 04	12 43
Frontenac	14 23	17 51	17 12	9 51	15 89	13 57	8 84	11 18	12 97
Leeds and Grenville	15 91	20 28	16 99	10 13	17 87	14 34	10 16	15 63	14 14
Dundas	18 12	24 37	17 65	11 89	23 63	16 69	10 47	20 55	17 07
Stormont	15 82	28 46	17 04	11 01	21 85	16 04	11 22	16 83	15 84
Glengarry	15 91	28 16	15 60	12 07	18 07	14 59	9 90	14 24	12 82
Prescott	.....	15 36	11 85	9 07	19 96	13 96	11 31	20 19	14 83
Russell	14 14	21 50	16 79	12 25	19 56	14 94	12 58	12 02	13 41
Carleton	15 82	19 66	14 42	16 03	21 65	15 66	12 67	18 87	16 15
Renfrew	20 86	17 92	17 44	17 27	14 30	15 12	13 77	10 10	13 48
Lanark	16 97	21 81	17 98	9 51	15 69	13 56	12 10	14 12	14 54
Group	16 33	19 29	16 81	12 90	17 81	14 71	10 67	13 19	13 59
Victoria	12 11	23 55	17 79	12 69	15 79	13 74	11 88	15 15	14 03
Peterborough	10 52	20 17	17 80	10 92	11 82	12 12	11 13	12 26	13 50
Haliburton	12 64	19 87	14 96	13 92	15 89	11 76	11 22	12 92	13 34
Hastings	17 95	20 17	17 63	10 66	12 11	13 79	10 74	10 22	12 89
Group	13 80	21 05	17 73	11 70	13 61	13 16	11 26	12 56	13 40
Muskoka	15 47	17 10	15 68	11 98	14 50	13 48	9 15	12 98	11 99
Parry Sound	13 26	.....	16 41	11 54	11 72	14 83	9 33	9 32	12 53
Algoma	13 26	14 79	18 62	16 74	18 87	18 24	11 00	18 03	14 74
Group	13 61	15 07	18 07	15 63	17 56	16 96	9 91	13 77	13 08
The Province	13 98	17 14	17 20	12 59	17 42	13 85	11 76	15 68	14 52

VALUE PER ACRE—OATS, RYE, AND PEASE.

TABLE No. XIV—Showing by County Municipalities and groups of Counties, the market value of crop per acre of Oats, Rye and Pease in Ontario in 1888 and 1889, with the yearly average for eight years 1882-9

Counties.	Oats.			Rye.			Pease.		
	1889.	1888.	1882-9.	1889.	1888.	1882-9.	1889.	1888.	1882-9
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Essex	10 43	18 91	14 05	9 54	14 39	11 79	9 02	15 37	11 50
Kent	11 80	17 78	14 47	11 20	13 73	12 05	9 25	14 06	11 74
Elgin	10 07	18 67	13 81	9 82	13 00	10 48	8 52	16 36	11 36
Norfolk	7 63	15 07	11 72	4 58	9 57	8 11	11 14	15 96	12 00
Haldimand	8 72	17 66	12 16	4 99	9 27	10 14	9 19	16 42	11 47
Welland	8 97	15 71	11 55	8 45	10 36	9 92	10 47	14 52	10 73
Group	9 76	17 48	13 14	6 24	10 63	9 09	9 64	15 60	11 58
Lambton	9 88	18 14	13 22	9 04	10 54	9 69	8 36	16 09	11 49
Huron	10 16	15 15	13 14	7 64	9 03	10 29	11 03	15 24	13 66
Bruce	7 84	12 64	11 54	10 18	15 05	10 51	10 08	13 54	13 75
Group	9 29	14 92	12 61	9 21	12 23	10 24	10 24	14 58	13 44
Grey	9 09	11 46	11 26	10 33	14 03	10 90	12 37	11 25	13 17
Simcoe	11 22	12 23	12 05	8 96	9 63	10 99	12 03	11 25	13 11
Group	9 96	11 78	11 59	9 15	10 19	10 97	12 23	11 25	13 15
Middlesex	10 68	17 33	13 77	8 55	11 26	10 07	8 08	16 15	11 79
Oxford	11 13	16 85	13 87	8 81	10 41	9 06	7 85	18 38	13 17
Brant	10 68	15 67	13 20	5 85	10 90	8 49	13 20	15 63	12 32
Perth	12 11	18 31	14 62	10 18	9 03	8 72	8 36	17 72	13 86
Wellington	12 17	14 86	13 11	8 25	12 64	10 63	10 97	15 43	13 91
Waterloo	11 41	16 00	13 62	5 50	12 04	10 28	10 25	17 53	13 77
Dufferin	10 28	15 11	12 33	5 34	18 06	10 77	11 81	13 67	12 84
Group	11 36	16 47	13 62	7 35	11 58	9 67	9 71	16 42	13 25
Lincoln	9 33	17 05	12 32	8 60	9 39	9 65	9 52	14 58	11 27
Wentworth	8 94	17 66	13 31	7 33	11 38	10 33	9 41	16 48	12 44
Halton	11 62	15 51	13 13	10 18	9 81	10 43	11 14	15 83	13 30
Peel	12 02	15 84	13 51	7 64	12 04	12 31	9 75	15 24	12 62
York	12 32	17 98	14 50	10 69	11 62	10 03	11 20	16 61	13 66
Ontario	12 57	17 21	13 79	8 55	11 44	10 79	10 25	14 19	12 79
Durham	10 77	14 22	12 92	8 50	9 45	9 20	9 36	10 66	12 06
Northumberland	9 24	10 21	10 58	6 46	7 53	8 03	11 36	6 21	10 26
Prince Edward	9 00	11 50	9 79	7 94	8 07	8 16	10 19	9 16	9 95
Group	11 14	15 83	13 10	7 65	8 75	8 88	10 37	13 05	12 20
Lennox and Addington	9 15	8 51	10 16	7 69	6 98	8 86	11 08	7 65	11 21
Frontenac	8 51	9 72	10 21	8 60	8 13	10 14	8 26	9 55	11 00
Leeds and Grenville	8 91	13 16	11 45	9 11	8 01	10 99	8 86	10 99	11 76
Dundas	8 78	16 08	12 83	10 18	9 63	13 72	6 85	14 72	13 31
Stormont	8 78	14 54	12 44	8 91	12 04	12 74	5 01	16 35	12 59
Glengarry	8 39	11 34	11 55	.....	9 00	11 16	6 68	11 38	11 18
Prescott	8 27	13 85	11 03	9 32	12 16	10 96	6 91	14 85	9 98
Russell	8 94	11 91	11 30	10 00	18 06	12 58	8 36	10 40	12 23
Carleton	9 30	13 12	12 51	10 84	10 17	10 87	12 64	11 25	13 13
Renfrew	11 96	8 59	11 28	12 17	8 91	11 73	15 21	10 40	12 57
Lanark	8 63	9 48	10 99	8 86	7 22	11 68	12 37	8 44	13 16
Group	9 18	11 95	11 53	9 82	8 57	10 94	11 33	10 50	12 02
Victoria	10 74	12 51	11 81	9 87	12 04	10 25	12 64	10 40	12 44
Peterborough	10 19	10 00	11 11	6 21	9 33	9 36	12 03	6 67	11 49
Haliburton	9 70	8 22	9 56	9 52	9 21	10 15	11 03	9 16	11 67
Hastings	10 25	8 91	10 42	8 09	8 01	9 26	11 59	7 00	10 52
Group	10 37	10 44	11 03	7 96	8 56	9 35	12 01	8 03	11 44
Muskoka	9 15	9 96	10 28	7 79	9 51	11 49	11 75	12 16	12 56
Parry Sound	8 30	10 61	10 86	11 61	9 03	12 74	10 14	15 55	13 18
Algoma	10 89	16 20	13 17	9 67	9 63	9 89	14 09	16 35	15 91
Group	9 40	11 78	11 14	9 38	9 49	11 59	12 76	14 90	14 27
The Province	10 20	14 33	12 48	8 09	9 27	9 77	10 63	13 40	12 59

VALUES PER ACRE—CORN, BUCKWHEAT, BEANS AND HAY

TABLE No. XV.—Showing by County Municipalities and groups of Counties the average market value of crop per acre of Corn, Buckwheat, Beans and Hay and Clover in Ontario in 1888 and 1889, with the yearly average for five years 1885-9.

Counties.	Corn.			Buckwheat.			Beans.			Hay and Clover.		
	1889.	1888.	1885-9	1889.	1888.	1885-9	1889.	1888.	1885-9	1889.	1888.	1885-9
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Essex	10 28	27 16	19 66	5 73	13 21	10 26	21 54	27 29	22 81	18 76	24 40	18 35
Kent	12 02	23 62	17 98	6 14	9 22	7 99	18 88	27 74	18 38	18 06	20 89	17 08
Elgin	13 31	26 25	19 79	9 48	9 86	7 98	26 86	27 06	21 34	19 76	20 02	16 92
Norfolk	13 34	23 88	17 34	7 47	10 30	7 93	31 68	28 43	17 75	16 57	11 14	13 68
Haldimand	12 56	27 72	19 68	7 74	8 78	7 23	17 48	24 22	18 49	13 97	9 86	13 39
Welland	11 81	25 23	18 60	6 83	10 11	7 96	16 85	21 04	15 20	15 57	10 53	13 59
Group	11 84	25 45	18 80	7 39	10 16	8 05	19 54	27 44	18 59	17 11	16 24	15 47
Lambton	9 56	23 23	17 00	6 64	9 07	8 28	19 64	28 42	18 36	16 57	18 65	16 14
Huron	12 95	26 25	21 06	7 11	7 39	7 50	25 34	34 12	26 01	15 97	16 04	15 59
Bruce	12 95	17 58	16 16	7 90	4 93	7 41	31 68	35 24	20 24	14 37	16 71	14 35
Group	10 57	23 23	17 57	7 14	7 41	7 76	23 20	31 15	20 35	15 52	16 74	15 26
Grey	9 84	14 65	12 97	5 53	8 13	6 80	25 34	18 88	16 93	14 37	14 37	13 91
Simcoe	14 89	21 01	15 20	7 50	7 40	6 65	25 34	15 92	20 83	14 97	13 87	13 82
Group	12 47	18 28	14 31	6 45	7 78	6 73	25 34	16 99	18 97	14 61	14 17	13 83
Middlesex	12 20	23 35	17 94	7 11	9 27	6 93	22 30	28 54	19 20	17 37	19 38	16 36
Oxford	11 06	22 06	17 03	7 23	7 39	6 94	25 34	31 84	25 60	17 07	19 38	16 44
Brant	15 54	22 12	18 34	7 39	11 14	7 77	20 65	26 85	14 74	17 66	9 52	13 75
Perth	9 07	24 17	17 14	8 06	7 39	7 13	30 91	28 42	24 15	15 97	20 72	16 41
Wellington	12 95	19 05	16 19	9 88	9 86	9 00	25 34	20 46	18 52	15 17	15 57	15 88
Waterloo	15 54	19 78	16 49	4 74	7 40	7 64	22 81	28 43	19 81	15 27	20 65	16 80
Dufferin	12 95	14 65	14 39	6 51	12 32	8 31	25 34	22 76	21 55	14 77	11 36	13 27
Group	12 54	22 49	17 60	7 36	9 36	7 38	24 24	28 72	20 18	16 23	17 49	15 82
Lincoln	11 73	25 49	18 22	7 27	10 94	8 35	24 07	30 35	21 12	15 27	11 53	14 35
Wentworth	15 90	25 87	19 35	6 08	13 61	8 88	28 51	34 11	24 32	16 67	14 37	14 18
Halton	15 54	23 44	15 91	6 24	4 93	5 75	25 34	22 74	19 31	15 57	9 19	13 14
Peel	20 98	14 65	17 21	6 95	7 39	7 43	31 68	22 73	22 41	15 27	9 07	13 04
York	15 23	21 68	18 47	7 90	11 09	7 78	24 07	27 29	23 78	15 77	11 86	14 02
Ontario	12 30	23 21	15 88	11 85	12 32	10 45	22 17	25 59	22 70	16 27	12 20	14 63
Durham	16 32	12 63	13 27	8 45	11 83	9 02	17 30	23 88	17 58	16 77	11 86	14 46
Northumberland	13 73	15 35	13 61	8 33	9 27	8 44	21 92	28 20	23 09	15 27	11 86	13 47
Prince Edward	13 93	18 52	13 60	6 91	15 04	9 74	28 51	23 19	18 70	18 26	7 85	14 22
Group	14 10	21 00	16 16	7 74	12 18	9 04	23 75	26 33	20 76	16 01	11 41	14 06
Lennox and Addington	18 26	16 03	15 72	13 19	10 55	9 29	36 49	27 66	18 33	14 37	8 36	12 20
Frontenac	13 28	15 88	14 32	11 02	11 39	9 52	26 35	23 19	24 12	15 57	7 69	11 42
Leeds and Grenville	18 41	20 16	18 02	9 52	8 13	8 88	21 79	27 06	21 89	16 57	11 53	14 04
Dundas	11 91	19 51	17 42	10 15	13 80	11 17	34 46	22 74	25 04	17 17	22 73	18 09
Stormont	15 70	17 58	16 69	10 23	11 63	11 16	28 51	22 74	24 82	18 56	24 23	18 23
Glengarry	16 84	11 72	14 77	8 89	9 86	9 02	28 51	28 42	24 58	19 16	25 90	19 65
Prescott	15 82	19 57	16 13	10 70	11 64	8 71	26 10	26 49	22 60	15 37	22 22	16 28
Russell	11 66	11 72	11 70	12 13	10 89	9 17	24 07	29 91	19 99	13 97	16 71	14 56
Carleton	13 88	12 75	13 83	12 56	8 23	8 72	28 51	20 12	20 69	13 07	17 21	15 48
Renfrew	12 74	8 79	13 26	8 30	8 38	9 01	36 87	21 04	26 33	11 68	8 36	10 98
Lanark	13 60	11 43	12 73	10 03	8 04	8 34	37 00	30 36	25 44	14 87	11 03	14 92
Group	15 85	17 08	16 01	10 64	9 53	9 15	29 85	24 30	23 09	15 39	14 27	14 50
Victoria	17 48	23 44	18 62	11 69	7 40	6 72	25 34	28 42	20 29	13 27	11 03	12 10
Peterborough	11 66	11 72	12 35	10 31	9 [illegible]	7 93	19 01	14 21	11 97	13 47	8 52	11 16
Haliburton	18 13	14 65	14 22	8 30	7 39	6 12	31 68	22 75	18 43	9 78	13 87	11 67
Hastings	12 87	16 73	13 98	8 57	10 94	9 09	17 10	23 54	20 15	13 37	11 36	12 64
Group	13 36	17 18	14 33	9 06	10 39	8 64	18 81	23 25	18 28	13 13	10 76	12 08
Muskoka	12 95	8 35	11 31	9 88	7 89	10 45	25 34	15 92	22 14	10 98	16 38	13 12
Parry Sound	9 84	11 72	12 52	11 85	9 85	8 58	21 50	22 70	19 33	12 38	11 70	11 47
Algoma	10 36	14 65	12 73	7 90	9 86	8 98	25 34	22 74	21 83	14 27	19 50	13 39
Group	11 72	10 87	11 80	9 49	8 39	9 88	24 97	18 73	21 70	12 19	16 14	12 82
The Province	12 80	22 91	17 70	8 91	10 47	8 80	21 58	26 77	19 45	15 59	14 64	14 56

VALUES PER ACRE—POTATOES, CARROTS AND TURNIPS.

TABLE No. XVI.—Showing by County Municipalities and groups of Counties the market value of crop per acre of Potatoes, Carrots and Turnips in Ontario in the years 1888 and 1889, with the yearly average for five years 1885-9.

Counties.	Potatoes.			Carrots.			Turnips.		
	1889.	1888.	1885-9.	1889.	1888.	1885-9.	1889.	1888.	1885-9.
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Essex	24 12	46 66	37 10	28 67	53 60	63 84	25 76	41 60	60 96
Kent	36 40	49 13	42 91	52 69	75 87	84 63	69 08	63 09	82 68
Elgin	31 08	53 32	39 49	82 72	96 48	91 90	65 21	84 51	80 70
Norfolk	24 07	43 27	30 89	68 25	89 52	76 46	63 38	92 81	85 76
Haldimand	26 48	53 95	44 14	66 61	86 65	76 62	59 28	72 80	63 57
Welland	29 21	42 26	35 30	73 16	101 47	87 85	63 61	83 20	81 50
Group	28 64	47 77	37 85	63 17	84 86	80 96	61 34	83 01	80 77
Lambton	25 57	47 84	39 41	65 25	89 06	84 61	45 60	84 91	70 14
Huron	46 27	41 91	51 40	85 45	94 58	106 88	72 50	81 83	93 18
Bruce	46 09	49 45	51 12	63 88	79 71	86 57	68 86	80 60	95 21
Group	41 77	46 13	48 60	74 57	89 05	96 12	70 06	81 35	93 60
Grey	46 96	48 63	56 60	83 27	80 40	99 62	72 96	73 63	91 54
Simcoe	50 96	51 58	54 61	101 56	85 89	97 22	94 39	82 91	92 55
Group	49 01	50 11	55 60	93 34	83 44	98 33	79 33	76 30	91 82
Middlesex	26 85	50 50	39 57	72 07	86 40	85 25	54 72	93 60	83 21
Oxford	33 58	60 93	40 93	91 73	106 37	102 52	63 38	99 24	98 60
Brant	34 13	42 64	42 90	76 17	125 75	114 78	58 37	106 31	100 32
Perth	26 66	51 96	45 32	60 33	92 70	105 64	57 91	88 15	90 23
Wellington	51 69	45 20	50 87	63 61	77 05	80 72	77 29	90 11	98 49
Waterloo	37 63	52 72	48 65	88 73	99 53	105 41	58 60	95 68	90 83
Dufferin	53 37	58 65	58 42	84 63	60 30	93 65	86 18	68 64	85 27
Group	38 35	51 32	46 57	77 00	94 34	97 45	67 88	92 48	94 87
Lincoln	28 44	47 36	40 80	64 43	107 82	88 93	75 01	101 17	82 57
Wentworth	35 72	46 41	48 09	54 60	96 83	95 22	71 36	114 34	107 97
Halton	40 63	49 67	45 69	109 20	123 28	113 71	59 28	115 44	98 11
Peel	36 04	44 79	41 35	79 72	104 87	84 95	74 78	85 15	77 94
York	48 37	53 79	44 35	90 09	109 42	113 80	71 82	90 13	90 54
Ontario	51 60	60 64	55 18	104 01	142 39	115 91	91 20	97 68	95 15
Durham	58 29	45 65	52 24	114 11	92 57	103 58	88 92	93 18	96 37
Northumberland	42 27	41 87	41 89	98 01	86 26	92 30	98 50	83 55	92 53
Prince Edward	29 39	42 79	39 88	40 95	87 56	61 03	22 80	70 72	57 05
Group	43 63	49 29	45 86	91 23	106 51	102 87	84 21	96 44	94 82
Lennox and Addington	51 55	36 01	50 16	84 63	81 74	75 80	51 30	45 30	61 42
Frontenac	29 30	37 75	39 47	61 70	57 51	71 35	51 98	49 57	67 35
Leeds and Grenville	30 85	41 11	50 48	87 36	83 08	84 99	77 75	68 12	81 06
Dundas	32 44	35 28	55 54	42 04	90 45	72 53	57 00	72 80	66 46
Stormont	21 61	40 77	48 89	81 90	40 20	58 89	57 00	41 60	63 62
Glengarry	20 02	42 80	46 89	56 78	53 60	62 08	51 30	83 21	93 33
Prescott	43 68	63 40	57 03	69 62	86 94	77 74	66 80	82 28	90 48
Russell	41 72	27 61	42 48	85 45	80 40	88 84	109 44	83 20	103 83
Carleton	63 52	40 73	54 71	84 08	61 93	80 60	85 04	63 67	77 57
Renfrew	86 45	40 04	65 70	83 27	33 50	71 08	88 46	49 92	71 49
Lanark	63 47	37 91	57 07	101 01	71 79	88 63	91 20	76 27	79 32
Group	46 42	40 47	52 27	78 61	65 90	78 69	81 54	63 45	77 39
Victoria	65 43	42 07	54 09	110 84	115 59	108 03	83 90	94 64	89 30
Peterborough	67 75	29 13	50 46	93 09	76 25	82 26	95 99	56 76	75 64
Haliburton	60 88	34 27	54 01	54 87	67 00	86 05	72 96	59 13	69 50
Hastings	55 46	36 80	53 26	81 63	79 33	88 10	67 49	55 68	67 72
Group	61 28	36 48	52 90	96 73	92 46	93 66	82 73	77 53	81 94
Muskoka	74 76	39 09	60 55	106 74	58 96	71 52	94 16	49 11	72 87
Parry Sound	71 84	26 63	70 07	63 34	50 92	86 17	84 13	81 12	78 03
Algoma	84 18	45 43	77 22	68 25	53 61	70 85	51 30	62 40	67 87
Group	76 27	37 32	67 16	89 41	56 19	73 78	81 27	60 11	73 00
The Province	44 80	45 87	48 87	83 20	90 66	94 18	75 97	87 55	92 12

VALUES PER ACRE—ALL FIELD CROPS.

TABLE No. XVII.—Showing by County Municipalities and groups of Counties in Ontario the average market value in 1888 and 1889 of all field crops and by groups as in Table XI; also the yearly average of the first group for eight years 1882-9, of the second group for five years 1885-9 and a *yearly average* of all crops derived from the aggregate in Table XII. and corresponding acreage.

Counties.	Wheat, barley, oats, rye and pease.			Corn, buckwheat, beans, hay, potatoes, carrots and turnips.			All field crops.		
	1889.	1888.	1882-9.	1889.	1888.	1885-9.	1889.	1888.	Yearly average
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Essex	11 76	20 20	15 54	15 62	26 48	19 74	13 69	23 40	17 69
Kent	12 12	18 86	15 67	17 30	23 57	18 55	14 43	21 00	16 99
Elgin	11 65	17 99	15 02	19 32	23 50	18 71	14 91	20 27	16 57
Norfolk	9 97	15 19	13 08	17 07	18 56	16 40	12 80	16 52	14 45
Haldimand	10 42	15 20	12 91	14 45	12 58	14 57	11 95	14 22	13 55
Welland	10 74	14 27	12 63	15 67	14 02	15 04	13 50	14 13	13 91
Group	11 17	17 16	14 29	16 69	20 67	17 45	13 63	18 70	15 71
Lambton	11 51	18 37	14 43	16 48	20 73	17 61	13 41	19 25	15 65
Huron	10 95	15 88	14 59	20 63	21 68	22 18	14 30	17 85	17 13
Bruce	9 42	14 30	13 82	18 79	22 17	20 93	12 87	17 14	16 36
Group	10 53	15 86	14 28	18 98	21 63	20 64	13 59	17 91	16 53
Grey	10 31	12 85	12 98	19 73	20 26	20 67	13 88	15 68	15 88
Simcoe	12 70	14 62	14 45	21 08	19 91	20 48	15 10	16 17	16 21
Group	11 53	13 75	13 70	20 27	20 12	20 59	14 46	15 91	16 03
Middlesex	11 05	17 11	14 88	18 05	22 91	18 92	13 62	19 19	16 38
Oxford	11 82	17 77	15 11	20 74	28 13	23 44	15 12	21 54	18 19
Brant	12 44	15 06	14 60	21 80	22 62	22 37	15 69	17 56	17 36
Perth	11 55	17 75	15 32	18 59	26 23	22 34	13 89	20 59	17 65
Wellington	12 34	15 85	14 34	24 70	26 70	28 24	16 66	19 66	19 24
Waterloo	12 86	17 34	15 70	21 27	29 84	25 94	15 40	21 21	18 93
Dufferin	10 66	15 50	13 33	21 63	18 73	21 12	14 23	16 53	15 85
Group	11 80	16 76	14 81	20 85	25 37	23 27	14 93	19 72	17 74
Lincoln	12 03	13 49	13 85	15 63	15 89	16 19	13 91	14 74	15 08
Wentworth	10 71	15 33	14 53	20 75	23 57	21 30	14 61	18 51	17 18
Halton	14 31	15 17	14 97	18 80	17 95	18 91	15 87	16 15	16 39
Peel	12 95	16 28	15 34	19 30	15 54	18 39	14 56	16 10	16 16
York	13 59	18 78	15 87	21 95	20 87	20 56	15 88	19 35	17 21
Ontario	12 81	18 14	14 99	31 54	31 63	31 21	18 15	21 99	19 77
Durham	11 66	14 75	14 06	27 19	22 96	25 40	15 83	16 95	17 12
Northumberland	9 94	10 96	11 95	20 73	17 91	18 86	13 49	13 25	14 24
Prince Edward	10 17	10 89	10 75	16 72	13 40	15 00	12 32	11 72	12 28
Group	12 14	15 49	14 24	22 02	20 70	21 17	15 24	17 13	16 48
Lennox and Addington	10 42	9 37	11 63	16 34	10 23	14 44	12 98	9 75	12 79
Frontenac	8 77	10 83	11 63	16 63	10 31	13 53	12 66	10 57	12 59
Leeds and Grenville	9 39	13 86	12 34	17 42	13 82	16 16	13 83	13 84	14 46
Dundas	9 28	17 13	14 03	17 74	23 15	20 11	13 45	20 07	16 99
Stormont	9 02	15 84	13 23	18 58	24 37	19 54	14 28	20 49	16 54
Glengarry	8 95	12 66	12 13	18 99	26 14	21 04	14 12	19 31	16 32
Prescott	8 57	15 67	11 58	17 21	24 35	18 88	12 68	19 89	14 94
Russell	9 64	12 81	12 13	18 20	18 84	17 98	13 33	15 47	14 66
Carleton	11 11	14 64	13 39	19 82	19 90	19 99	14 48	16 75	16 05
Renfrew	13 90	10 34	12 68	16 40	10 30	14 62	14 95	10 32	13 51
Lanark	9 89	10 92	12 32	17 64	12 82	17 08	13 55	11 85	14 69
Group	10 27	12 76	12 46	17 62	16 15	17 06	13 75	14 40	14 63
Victoria	11 70	14 15	13 31	24 20	22 09	21 87	14 98	16 17	15 66
Peterborough	10 70	11 29	12 43	20 78	12 20	16 01	13 62	11 58	13 54
Haliburton	10 53	9 69	10 49	14 55	16 15	15 64	12 69	13 36	13 46
Hastings	11 16	9 87	11 86	16 95	14 25	15 97	13 41	11 64	13 43
Group	11 20	11 77	12 47	19 44	15 76	17 42	13 93	13 12	14 13
Muskoka	9 80	10 78	11 18	19 06	18 96	18 60	15 47	16 01	15 99
Parry Sound	8 95	11 45	12 13	20 12	16 12	19 33	15 43	14 15	16 06
Algoma	13 45	16 78	16 03	19 96	22 70	19 83	16 21	19 33	17 76
Group	11 17	13 45	13 37	19 55	19 28	19 00	15 71	16 70	16 54
The Province	11 35	15 09	13 88	19 35	20 14	19 65	14 37	17 00	16 07

FARM WAGES.

TABLE No. XVIII.—Showing by County Municipalities and groups of Counties the average Wages of Farm Laborers and Domestic Servants in Ontario in 1888 and 1889, and the average for the eight years 1882-9.

Counties.	Farm laborers.												Domestics per month with board.	
	Per year —						Per month in working season—							
	With board.			Without board			With board.			Without board.				
	1889	1888	1882-9	1889	1888	1882-9	1889	1888	1882-9	1889	1888	1882-9	1889	1888
	$	$	$	$	$	$	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Essex	162	156	160	269	266	258	17 71	16 93	17 53	26 24	27 01	27 05	7 81	6 39
Kent	167	163	170	257	251	262	17 83	17 20	18 14	25 97	26 49	26 87	7 08	7 12
Elgin	173	166	169	257	248	251	17 55	17 05	18 02	25 48	27 09	27 05	7 15	6 74
Norfolk	152	140	154	236	229	237	16 18	15 16	16 26	23 92	21 68	23 98	6 00	5 79
Haldimand	153	145	154	240	247	242	16 86	16 26	17 45	25 62	25 33	26 67	6 71	5 95
Welland	146	147	147	234	246	243	16 76	16 23	16 79	25 17	25 51	26 72	6 80	6 30
Group	160	154	160	249	248	249	17 19	16 56	17 51	25 45	25 50	26 38	6 93	6 41
Lambton	162	161	168	264	265	267	18 47	17 15	18 18	26 90	26 93	27 77	6 82	6 51
Huron	163	158	164	248	254	256	17 90	17 06	18 01	26 58	26 14	27 39	6 32	6 22
Bruce	164	155	161	245	251	253	17 86	17 42	18 14	26 00	27 43	27 42	6 24	5 81
Group	163	153	164	250	256	258	17 98	17 21	18 10	26 39	26 81	27 54	6 38	6 13
Grey	157	152	157	241	241	244	16 97	16 89	17 55	25 59	26 30	26 69	6 04	6 40
Simcoe	163	158	163	260	263	264	18 00	17 14	18 31	27 41	27 48	28 23	6 71	6 15
Group	160	155	160	253	251	255	17 44	17 01	17 98	26 66	26 86	27 54	6 33	6 28
Middlesex	161	156	165	250	242	250	17 09	16 81	18 23	25 24	25 98	26 91	6 86	6 68
Oxford	161	157	164	249	246	249	17 45	16 40	17 18	25 26	25 43	25 90	6 75	6 65
Brant	160	152	160	241	245	246	16 45	15 87	17 11	23 65	25 72	25 79	6 99	6 40
Perth	158	156	163	240	242	255	17 27	17 11	18 54	25 72	27 54	28 44	6 53	6 20
Wellington	163	162	164	246	247	256	17 16	16 95	17 56	26 08	26 55	27 24	6 61	6 26
Waterloo	158	149	156	250	261	253	17 33	15 94	17 40	26 40	26 82	26 66	7 18	6 08
Dufferin	164	148	156	254	248	251	17 88	16 89	17 77	25 00	27 45	27 47	6 66	5 91
Group	161	155	162	245	247	251	17 20	16 65	17 69	25 31	26 40	26 76	6 76	6 37
Lincoln	157	157	159	257	243	247	17 92	17 18	17 74	26 71	26 54	26 34	6 52	5 99
Wentworth	162	159	159	250	260	253	18 27	17 07	17 65	26 17	26 66	27 05	7 05	6 69
Halton	170	167	170	259	250	264	18 07	17 38	18 32	26 65	26 53	27 70	7 47	7 11
Peel	170	157	175	259	270	266	18 23	17 46	18 51	25 91	27 63	28 11	7 44	7 16
York	170	166	170	260	263	264	17 72	17 02	17 93	26 72	27 47	27 82	7 33	6 51
Ontario	162	163	167	243	255	259	17 01	16 35	17 66	25 32	26 19	27 47	6 79	6 14
Durham	160	155	163	241	251	249	16 55	16 32	17 21	24 30	25 24	25 97	6 73	6 53
Northumberland	156	150	156	231	237	242	16 64	15 84	16 91	23 98	25 09	25 56	6 41	6 12
Prince Edward	151	154	152	221	238	228	16 72	16 61	16 80	22 47	23 63	23 83	5 67	5 96
Group	163	159	164	248	252	252	17 44	16 84	17 67	25 54	26 34	26 73	6 86	6 47
Lennox & Add	152	151	155	228	227	235	16 84	16 10	16 82	23 44	23 97	25 29	5 56	5 26
Frontenac	155	156	154	235	246	247	18 76	17 10	17 70	27 34	26 79	26 78	7 43	5 83
Leeds and Gren	159	161	164	236	255	252	18 72	17 96	18 42	26 43	26 03	26 68	6 83	7 00
Dundas	150	149	158	231	238	238	17 19	16 98	17 61	26 11	27 52	27 67	7 00	6 61
Stormont	166	162	166	271	270	247	17 75	17 83	18 57	26 88	27 65	27 82	6 23	6 00
Glengarry	146	144	158	244	245	250	18 07	17 33	18 45	26 91	26 87	27 85	6 46	6 46
Prescott	162	150	164	236	254	259	18 18	18 08	18 91	26 78	27 56	28 06	6 17	5 26
Russell	166	145	166	290	259	260	18 18	17 53	18 66	28 50	26 82	27 58	5 85	5 48
Carleton	169	167	166	254	265	259	17 67	17 61	17 80	26 33	28 19	27 63	6 98	6 81
Renfrew	164	159	170	251	257	265	17 60	17 25	18 09	26 21	27 05	27 61	5 60	5 37
Lanark	162	173	174	256	278	269	18 12	17 98	18 62	27 00	27 08	27 63	6 59	6 18
Group	159	157	163	241	252	251	17 92	17 43	18 22	26 24	26 72	26 98	6 37	5 98
Victoria	167	169	169	267	253	256	18 04	16 77	17 89	27 00	25 79	27 21	6 41	6 33
Peterborough	171	160	170	265	257	263	17 57	18 10	18 46	26 52	26 53	26 35	7 15	6 80
Haliburton	165	151	163	256	253	261	18 07	17 54	18 46	26 25	28 36	28 53	4 92	5 41
Hastings	159	157	161	260	250	254	17 39	16 91	17 42	26 46	26 00	26 17	6 11	5 46
Group	165	160	166	263	253	257	17 67	17 34	17 98	26 55	26 37	27 19	6 32	6 06
Muskoka	158	167	168	257	277	272	19 23	19 07	19 42	28 82	29 43	29 33	6 55	6 48
Parry Sound	179	138	171	295	250	273	18 58	20 29	19 47	28 86	31 09	29 88	5 83	6 96
Algoma	182	182	178	278	256	276	20 72	20 26	20 71	28 82	28 77	30 08	6 81	6 13
Group	175	170	174	278	267	275	19 38	19 62	19 73	28 83	29 40	29 65	6 32	6 43
The Province	162	157	163	249	251	253	17 59	16 99	17 83	26 01	26 50	27 10	6 61	6 28

APPENDIX.

FRAUDS ON FARMERS.

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The replies to questions sent out by this Bureau regarding frauds on farmers attest the timeliness of the enquiry. In fact, the answers received would lead to the conclusion that the rural population of the province is still reckoned as good prey by certain glib-tongued and unscrupulous fellows who are thriving on the ignorance, vanity or cupidity of their victims. But, on the other hand, the replies also show that the farmers are becoming well informed regarding the operations of the swindlers who infest the townships, and while this knowledge has sometimes been bought by a costly and painful experience, more frequently it has been gleaned from the warning columns of the press of the province, which has done good service in exposing frauds on agriculturists. With the exception of the notorious seed wheat and oat swindles, there appears to have been a marked falling off in the number of frauds practised on farmers during the past two years. Nevertheless, a system of deception and roguery has been brought to light which it is the purpose of this paper briefly to describe.

Scope of the Frauds.—Among the other articles reported as having been used in fraudulent transactions are churns, washing machines, pumps, harness, sickle grinders, stove-pipe shelves, land rollers, plows, barbed wire, lightning rods, hay forks, weigh scales, roofing paint, pianos, sewing machines, fruit trees, etc., as well as various kinds of patent rights. Brief descriptions of the most widely practised of these swindles are given, and they may be taken as samples of the whole.

The Local Agent Racket.—The pump fraud was worked extensively in Bruce and other western counties a year or two ago, something after this fashion: A travelling agent comes to a farmer and asks him to become an agent for the sale of iron pumps offering as an inducement to place one pump in the farmer's well free. The parties come to an agreement by which the farmer consents to receive eleven pumps, which he is to sell at $15 a piece, keeping $5 on each pump for his commission, and sending the balance to the company as the articles are sold. The farmer then signs what he believes to be an order for the pumps on these terms, but the paper turns out to be a promissory note for $165, the retail price of the eleven pumps. Sometimes a note is asked for, merely to cover the value of the pumps "on exhibition" at the farm house, and occasionally there is a "verbal understanding" that the unsold pumps will be taken back: but, while the note invariably turns up, the man with whom the farmer had the verbal understanding never appears again. A number of these pumps are now rusting in western barns. This style of fraud, which is known as the "local agent racket," has been worked in the disposal of several of the other articles named in the preceding paragraph.

The Hay-fork Swindle.—The hay-fork swindle, like the Canada thistle, has appeared in nearly every section of the province. In many cases it is worked exactly as the pump fraud described above, but occassionally it takes a form of this sort: A representative of the firm calls upon the farmer and offers to put up a hay-fork for nothing if the farmer will accept an agency for the fork, terms which the latter is only too willing to accept. A few days afterwards a second representative of the makers comes along and gets the farmer to sign a statement of his affairs, "just to show that he is a responsible party." In the course of a week or two the victim is surprised to learn that the so-called statement of his affairs is really a skilfully worded order for a number of forks, and that they

have arrived at the nearest railway station. Sometimes the farmer gives an order for forks, there being a verbal agreement that he is to pay for the forks only as they are sold; but in such case a note is taken to cover possible loss by fire or other accident, and this note invariably finds its way into the hands of a third party for collection.

Patent Rollers.—An agent for a patent roller a few years ago persuaded several farmers of Simcoe to join in a note to the extent of $10 apiece for one of his implements. The note was discounted, but the roller never arrived.

Fanning Mills.—A peculiar fanning mill swindle is reported by a Middlesex correspondent, who writes:

Several years ago a firm started in the fanning mill business. They were not successful in their canvassing, so they rented a room near London market and exhibited the mill in working order. Their method was to invite farmers to inspect their mill and its work, which was apparently very good. They then asked the farmers to sign in a large book a recommendation of the mill and its work, and every farmer who signed had a mill sent to him. On refusal of payment they were sued. Some paid and some stood a suit, when the fraud was exposed and the business wound up.

Lightning Rods.—The frauds in connection with lightning rods are two well known to need description here. During the past two or three years there has been a decided lull in this class of swindle, owing to exposure in the western courts.

Patent Right Agencies.—While farmers have thrown away a good deal of money by accepting agencies for patent rights, the loss in the majority of cases has resulted not so much from the fact that the articles were without value in themselves, but rather on account of the poor judgment of the purchaser in taking an article for which there was no local demand, or in paying an unreasonable sum for a too limited territory.

Nursery Agents.—From every quarter come complaints of fraudulent nursery agents. The charge made against this class is that they cheat the farmer: (1) By charging exorbitant prices for alleged new or rare varieties of fruit and other trees which are either worthless or, at the best, old varieties under a new name. (2) By representing certain trees or shrubs to be hardy when they are utterly unsuited for the soil or climate. (3) By sending common and inferior trees instead of the standard sorts ordered. (4) By shipping trees, etc., at unseasonable times, and often in a dead or dying condition, owing to carelessness in packing. Sometimes the agent will personally agree to replace all trees dying within three years, but after the first season he is in pastures new. In this connection a correspondent points out the danger to orchards from certain wandering grafters. He states that one of these peripatetic gardeners was heard to boast that he never ran short of scions while any orchard was near, or in other words, any graft would do if their supply ran out.

Tricks of Agents.—Pianos and organs have been fully paid for in cash by farmers, who then signed what they were told was an acknowledgement of the receipt of the instrument, which, however, is a lien upon the article until a second payment is made. Old sewing machines have been polished up, revarnished and palmed off as new, and many clever but rascally tricks have been practised by repairers of machinery in order to get a job or effect the sale of a rival article.

Shoddy Pedlars.—Shoddy pedlars are reported all over. These fellows generally travel in pairs, and the stories they tell regarding their stock are ingenious. They represent a great English or Scotch house which can afford to cut away below Canadian prices; an insurance company has forced the sale of the goods; a wholesale house is anxious to deal direct with the purchaser; or some other plausible tale is repeated with unblushing effrontery. A little factory cotton is sometimes sold at two or three cents a yard with the cloth, so as to lead the buyer to believe that he is getting all the goods at equally favorable rates, and the shoddy dealers also claim to have made arrangements with some local tailors to make up suits from their cloth at prices next to nothing. Sales are seldom made below $30. The goods are of the poorest texture, and often will not stand sewing together.

Bogus Jewellery.—Many farmers have been fleeced by pedlars of bogus jewellery and imitation gold and silver watches. The alleged gold watches are of no real commercial value, being made of some cheap composition, but as high as $60 have been paid for them. Valuable jewellery and first-class watches are never peddled.

Book Agents.—Book agents are not peculiar to the rural districts; but many of our correspondents charge this class of agents with fraud. And in some instances the charge appears to be sustained.

Foul Seed.—Several correspondents characterise as fraud the custom of selling foul seed, containing a plentiful admixture of mustard, red root and other weeds hard to get rid of.

Green Goods.—The province has been flooded with circulars offering to supply counterfeit money, "printed from genuine plates used by former workmen." An alleged newspaper clipping accompanies the circular describing a fictitious case, in which a man charged with passing some of the notes was discharged upon government experts refusing to swear that the money was not genuine. "In fact they could not," says this remarkable expert, "as they were positive that the bills were as good as any issued by the government," etc. Any man who is rogue enough to enter into this swindle will lose his own good money, and instead of the "green goods" so wonderfully described in the bogus court report he will get a package of sawdust and a lesson that he richly deserves.

Victims of Vanity.—Many farmers have fallen victims to their vanity. A Simcoe correspondent shows up this weakness in the following sketch, which is true to life:

> The principle resorted to by the hayfork and other agents is judicious flattery. Well-to-do farmers are approached by the swindler, who pretends to be surprised at the forethought of the farmer in the laying out of his farm and compliments him upon the convenience of the buildings, appearance of the crops, etc., and then when the farmer begins to feel that he is after all quite smart, the agent informs him that he has a very valuable labor-saving machine which he desires to get introduced into the neighborhood, and as he (the farmer) has been recommended as the most influential man in the vicinity he desires his aid. He offers him a high percentage, and tells him that he will not require to pay or make returns until the articles are sold. If the flattered farmer consents, he signs an agreement to act as agent, but in a few weeks the delivery man comes around with the goods, and to the horror of the farmer this simple agreement to act as agent has been changed to an order for goods to be paid for on delivery.

The Promissory Note Trick.—Space will permit the description of but two or three other kinds of fraud. One of these is thus outlined by a Nassageweya correspondent:

> The plan of catching farmers on these articles (washing machines, sickle grinders, etc.) was to induce them to become agents for their sale, and sign an agreement in triplicate, one paper to be held by the farmer, one by the contracting party, and one to be sent to the manufacturing firm. The agreement held by the farmer was all right, but by some means the other paper always turned out to be a promissory note for one hundred dollars.

A bold attempt at swindling is told by a Norwich correspondent in the following words:

> Mr. M. was asked by two agents who called on him to give his name as reference, to whom could be submitted the names of purchasers of pumps, in order to find out their financial standing. He wrote it, number of lot and all, on a piece of paper supplied by an agent, who left it lying on the table while he drew Mr. M.'s attention to something out of doors, the three men going outside. Agent No. 2 was cold and went in to warm himself, saw the paper, picked it up, and after reading it took it and went away with his companion. After they had departed Mr. M. looked for the paper, and was informed by the women in the house where it had gone. He started in pursuit of his late visitors and after going five miles caught up to them. Being a powerful and determined man he was not long in inducing them to give up the paper, when he found that he had signed a note for $300.

This bears out the charge made by other correspondents that a promissory note lies hidden under the paper the farmer believes he is signing, and that by a little manual dexterity the dishonest agent can get an unsuspecting man to sign any document.

It is difficult to procure copies of deceptive contracts, as the victims in many cases are ashamed to show them, and the swindlers are too shrewd to permit copies of the forms to get into other hands than those intended. Some of the documents, however, are most ingeniously arranged, a conditional order, or even a receipt for storage being easily transformed into a negotiable note. The agreement given below looks innocent

enough, but if it be torn off between the words "or" and "bearer" it is turned into an ugly promissory note.

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One year after date, I promise to pay A. W. Hammer, or bearer Twenty dollars when I sell by order Two Hundred and Twenty Five Dollars worth of Patent Grass Seeders, for Value Received, at Six per Cent. per Annum said Twenty Dollars when due to be Payable at.....

..... Sole Agent for .....

A Marriage Game.—The most impudent fraud yet recorded took place only a short time ago, in a western county. A clerical looking gentleman, accompanied by a blushing young couple, drove up to a farmer's residence, when it was explained to the master of the place that the young lady, who was on her way to be married, had taken a whimsical notion to be married in the handsome farmhouse, and had coaxed her intended husband and the minister to ask that the ceremony be performed under such beautiful surroundings. The request was accompanied by the offer of a liberal payment for the privilege. The farmer was delighted with the proposition, and lent his assistance heartily. The couple were duly united, a sumptuous repast was spread, and all went merry. The bridegroom was munificent, and pressed $40 upon the obliging host, for which he obtained a receipt; and the bridal party left under a shower of congratulations. The sequel to this tale is to be found in a court case, in which the alleged receipt turned up in the hands of a third party as a promissory note for $400.

Conditional Sales of Chattels.—Several correspondents complain of losses to innocent men through the operations of the Manufacturers Lien law. It is said that buggies, reapers and other implements have been purchased at auction sales and paid for, no mention having been made by the auctioneer or owner of a lien or any other liability on the article. Several months afterwards the manufacturers have forced a second payment by virtue of the lien held by them on the article in question. A correspondent in the township of Carrick, county of Bruce, mentions four cases of this character, each causing considerable loss to an unsuspecting farmer who had made a purchase in good faith.

An Act of the Ontario Legislature which came into operation on the 1st of January 1888, deals with certain phases of transactions of this character. It provides that receipt notes, hire receipts and orders for chattels given by bailees of chattels, where the condition is such that the possession of the chattel should pass without any ownership being acquired by the bailee (or person to whom the chattel is delivered in trust) until payment of the purchase money or some part of it, shall only be valid as against subsequent purchasers or mortagees without notice in good faith for valuable consideration in the case of manufactured goods or chattels which at the time possession is given have the name and address of the manufacturer, bailor or seller painted, printed, stamped or engraved thereon or otherwise plainly attached thereto, and no bailment is valid as against a subsequent purchaser or mortgagee unless it is evidenced in writing, signed by the bailee or his agent. Every manufacturer, bailor or seller is also required on application by any proposed purchaser or other interested person within five days to furnish full information respecting the amount of balance due or unpaid on such goods or chattels and the terms of payment thereof, subject to a fine of $50 in case of neglect or

refusal. But those provisions do not apply to household furniture other than pianos, organs or other musical instruments; nor in case where the manufacturer, bailor or seller has within ten days from the execution of any receipt note, hire receipt, order or other instrument evidencing the bailment or conditional sale given to secure the purchase money filed a copy of the same with the clerk of the County Court of the county in which the bailee or conditional purchaser resides. The clerk of the court is required to file the copy of the instrument in an index book to be kept for that purpose, and is entitled to charge ten cents for every such filing and five cents for every such search of it. The manufacturer, bailor or seller is furthermore required to leave a copy of the instrument by which a lien on the chattel is retained, or which provides for a conditional sale, with the bailee or the vendee (the person to whom the chattel is sold) at the time of the execution of the instrument, or within twenty days thereafter.

The Seed Grain Swindle.—The fraud which has commanded most attention, both from its peculiar character and the extent of its operations, is what is known as the seed grain swindle. It has travelled under a score of *aliases*. At one time it is the Bohemian or Hulless Oats, now it is the White Star, and again it has some other taking name. Or, presto! it is turned into wheat, and masquerades under a dozen pleasing titles. But though this swindle changes its name, it never changes its character.

One of our correspondents, an intelligent farmer of Prince Edward, describes a scheme conducted by a company now operating in his county. He writes from the standpoint of a man who has every confidence in the concern, and from his statement some idea may be had of the extent of the deal in that locality. He says:

> There is however a seed grain scheme now being carried on in this county, which, though peculiar cannot properly be described as a fraud, because the conditions are very simple and plain and no effort that I have heard of has been made to deceive any one. I refer to the "Hulless Oats" scheme, of which you doubtless have heard, and which will often be referred to in the answers to your enquiries. The plan is simply this: A company sells you a certain number of bushels of grain at $10, $15 or $20 a bushel, and agree to procure a sale for double the quantity bought, at a reduction of 25 per cent. commission, which they retain as their profit in the transaction. The success that has attended the scheme is accounted for by the fact that the company has thus far scrupulously fulfilled its part of the contract to the very letter, and as a consequence many of the leading farmers of this and adjoining counties have embarked in the scheme. So great has been the demand for seed that every bushel raised under contract has been required for seed, and thus farmers from an investment of say $100 have realised from $800 to $1,000, and in some cases even a larger amount. I do not think the company is responsible, or that the farmers so consider them, but they argue that the scheme is so arranged and conducted as to create a community of interest, and for every dollar the company makes the farmers are going to receive two and a half times as much. I do not say that the constitution of the concern is fixed upon sound principles, but inasmuch as no attempt is ever made at deception, and as in no case has the company failed in its agreement. I do not see how the scheme can be called a fraud or swindle.

He will probably have a better understanding of the matter when the company has reaped and gathered its harvest. "Purchasing hulless oats was better in theory than practice," is the conclusion of one correspondent. And again: "The Eldorado wheat produced its grain of wheat to the bushel of chaff." And once more: "The Seed Grain Association were robbers protected by charter and assisted by church members who would have claimed a share of the 'thirty pieces of silver' if they had been there."

Extent of the Frauds.—Owing to the indefinite nature of the reports received on the subject, and the extreme reticence of those who have suffered by imposition, it is almost impossible to form anything like a correct estimate of the extent to which frauds have been perpetrated in the province. The reports generally tend to show that of late a heavier loss has been sustained in the eastern than in the western counties. This may be attributed to the fact that the statements called for were to embrace only such frauds as had been committeed during the past two years, and it appears that in the majority of cases the western counties were "worked" prior to that time, while of late the eastern ones have been receiving the larger share of attention. Thus, while in some localities frauds have been extremely rare, in others they have extended to several thousands of dollars. At the same time there is not a township where fraud of some kind has not been perpetrated. Roughly speaking, the province might be divided into

three districts, each having its characteristic frauds, although of course these grade into one another in a greater or less degree. Thus, the southern district is preeminently the field for seed grain frauds; in the Midland counties a greater variety prevails, such as implements, seed grain, fruit trees, book agencies, etc.; while in the more northern districts of Parry Sound, Muskoka and Algoma the shoddy cloth pedlar seems still to hold almost undisputed sway, although now almost obsolete in the south. From York to Frontenac the great seed grain swindles have been worked very extensively. In Prince Edward county especially the amounts involved have been exceedingly large, reaching many thousands of dollars in the aggregate, and affecting directly or indirectly almost nine-tenths of the community. Lennox and Addington appear to rank next, where in the townships of Ernestown, Adolphustown, the two Fredericksburgs and Amherst Island alone the loss is estimated at nearly $25,000. Here, as one correspondent says, the farmers "have their oats but not their notes." In some parts of the counties of York and Northumberland the loss has been pretty severe, while in the extreme east, Renfrew and Carleton have been canvassed with liberal success. A correspondent in Whitchurch, county of York, writes: "Our neighbour got a churn and patent for his autograph, and afterwards paid $500 for its return." In the western portion of the province the fraud area is more evenly distributed, and the farmers of this section appear to be profiting largely by the experience so dearly bought. Oxford, Elgin and Norfolk have suffered to some extent, and it would appear especially in Oxford that sham jewellery has been largely vended. In Brant the book agents have been active, and the libraries of many farmers have been increased in a way that they knew not of. In Bruce, Huron, Dufferin and Simcoe the losses are variously estimated, and the articles dealt in appear to be somewhat nondescript in their character. The losses seem pretty general, although not so extensive as in many other parts of the province.

Remedial Measures.—Many and varied are the ways and means suggested by our correspondents for the prevention and cure of the fraudulent agency pest. Of these the majority are impracticable; others are too cumbersome: very few even begin to solve the difficulty. Some seem to be laboring under the impression that the Legislature has but to lift its finger in order to sweep every offending agent from the land. To say the least, such have but a strange idea of the functions of the law or of the Legislature. The Legislature cannot think for a man, neither can it become as common sense or good judgment to him. As an instance of this, it is suggested by several that the Government should appoint officials in each county who may be called in when such transactions are being negotiated to watch the interest of the farmer, and to read over to him the conditions of the contract or the note so as to protect him generally from all such ravening wolves as agents and pedlars. It is needless to say that suggestions of this kind are very impracticable. It seems generally to be conceded, however, that if the farmers would read the newspapers carefully there is no reason why they should not be fully informed regarding the greater number of fraudulent transactions. Among the more feasible of the suggestions the following may be noted:

That in every county agents be required to obtain a permit or license, to be issued at the discretion of the Inspector of Licenses, or some duly authorized individual, after proving that their business is of a *bona fide* character; and that such license shall be shown to any ratepayer on demand; failing to do this that they may be summarily dealt with.

A correspondent writes that the municipal council of Amherst Island has already adopted such a measure, and that it appears to work well. Akin to this are the suggestions: "that every agent be required to pay a heavy license or deposit before proceeding to do business, and that the law provide a very heavy penalty in all cases of conviction for fraud:" "that all implements subject to a lien be stamped with a metallic stamp bearing a penalty sufficient to prevent its removal until discharge of said lien:" and "that fraudulent practices be discussed more unreservedly at the meetings of farmers' institutes, division granges, etc." These, with greater publicity by the press, appear perhaps to be the most convenient means that could be taken at the present time, and without special legislation. The only steps that appear to have been taken to prevent

fraud, excepting the by-law of the Amherst Island council, already referred to, appear to have been through exposures in the press, and by the distribution of hand bills and posters. There is considerable wisdom and advice contained in many of the following suggestions of correspondents, some of which may strike home :

(1) That farmers stick to their legitimate employment, and hasten slowly to accumulate wealth. The man who devotes his time to agencies must necessarily do so at the expense of his farm.

(2) Only a dishonest man strives to get the advantage of his neighbor.

(3) Deal with none but well established firms, and properly authorized agents.

(4) Never sign anything for a stranger, and in all cases read carefully what you sign.

(5) Read the newspapers, and pay for them.

(6) Remember that it takes a rogue to catch a rogue.

(7) Attend your Farmers' Institute if a member : if not, pay your dollar like a man and become one.

Numerous others are given, and from our more warlike correspondents come vague hints as to shot-guns, pitchforks, dogs and boot leather, each of which is said to be a never failing recipe.

Notes given for Patent Rights.—An Act of the Dominion Parliament (chap. 123, R.S.C. 1886) provides (1) that in the case of a bill of exchange or promissory note, the consideration of which consists in whole or part of the purchase money of a patent right, or of a partial interest in a patent right limited, geographically or otherwise, it shall have written prominently and legibly across its face before issued the words "given for a patent right;" (2) that the transferee (if the note is transferred) shall take it subject to any defence or set-off which would have existed between the original parties ; and (3) that any person who knowingly issues, sells or transfers by endorsement or delivery any such bill of exchange or promissory note not having the words "given for a patent right" printed or written across its face is guilty of a misdemeanor and liable to imprisonment for a term not exceeding one year, or to such fine not exceeding $200 as the court thinks fit. The bill upon which this Act was founded was introduced in the House of Commons by Mr. Mulock in the session of 1884, and in moving the second reading Mr. M. said :

I would desire to mention some of the considerations which induced me to introduce this bill. It must be within the knowledge of many honorable gentlemen, that for a long time frauds have been perpetrated throughout the country, especially in the rural districts, in connection with patent rights, whereby many innocent and trusting people, have been serious losers. The patent laws were never intended to provide an instrument by which fraud might be perpetrated ; but the patents themselves, although in many cases most useful, open the way to fraud, and often they have no practical value, but are only useful in the hands of designing agents. Artful men are able, frequently, by the use of cunning arguments, to make use of the rights they have acquired from the Department to receive valuable securities from people not sufficiently skilled in law or in fact to determine whether these patents have in themselves any legal or practical value. The course commonly pursued in such cases by the agent who desires to sell—not the article patented, but the mere right to use this patent right—is to tempt an unsuspecting person into a purchase, giving him as an inducement credit for payment, and as a part of the designed fraud he takes security that is ultimately negotiable. He sells his right to make use of the patent, and receives in return a promissory note from the purchaser, perhaps under circumstances that between the two parties would be sufficient to prevent the vendor ever recovering on the note ; but he is still able to negotiate, and as a rule does negotiate such note before maturity and defeat the purchaser in any defence he would otherwise have. . . The bill provides that notes given for such consideration shall be marked across the face with the words "given for a patent right," so that such notes shall bear on their face evidence as to the consideration for which they have been given. If then any valid defence should exist against payment it will be continued against the purchaser, who, in fact, takes the note with such notice.

On the motion for the third reading of the bill Sir John Macdonald said : I do not object to the third reading of the bill, although I agree to it with a good deal of hesitation. It has been strongly impressed upon me that the sale of these fraudulent patent rights has become a crying nuisance, and is a case for special legislation. I regret very much that these frauds have been so extensive as to require special legislation.

It is manifest, from the information given by the correspondents of the Bureau, that there are many other crying nusiances in the country of the same character as those fraudulent patent rights which the Act of 1884 was designed to prevent, and are equally deserving of special legislation. It may be difficult to frame a law which would meet every case, but the principal of the Act of 1884 is doubtless capable of wide application.

CASES IN COURT.—Two cases have recently been tried in the courts in which the rights of parties have been determined. A summary of these cases is presented below:

Regina v. Rymal.—In this case of prosecution for false pretences the evidence taken before the County Court Judge of Ontario was submitted to the Court of Appeal in Toronto for decision, which was rendered February 14, 1889. In June, 1887, one John W. Rymal, representing himself to be an agent on behalf of one Thomas Hope for a certain variety of seed wheat termed "The Blue Mountain improved Seneca fall wheat," fraudulently induced the prosecutor W. C. St. John, a farmer, of the township of Reach, county of Ontario, by false representations to enter into a certain contract, and afterwards to write his name to a promissory note, so that the same might be used and dealt with as a valuable security for the benefit of the said Thomas Hope, by alleging that he (Rymal) had before then obtained from certain farmers in the neighborhood signed agreements to sow certain bushels of fall seed wheat (amounting to 26 bushels in the aggregate), and to harvest, thresh and deliver on the 1st day of November, 1888, one-half of the wheat produced therefrom to the farmer from whom they should receive the seed grain. It was further agreed that unless wheat to the value of $200 was returned to the prosecutor he should not be held responsible, and that his expenses in the matter should be paid. By this means Mr. St. John was induced to sign certain papers by which he agreed to take 30 bushels of the wheat, distributing it by shares as arranged, and to pay for the same at the rate of $8 per bushel on delivery. The prosecutor stated in his evidence that speculation was not his motive for taking part in the enterprise, but chiefly to improve the quality of his seed. As soon as the consignment was received by the prosecutor the stipulated payment was demanded by Hope, either in cash or in the form of a promissory note. St. John chose the latter alternative, desiring to see how the speculation would turn out before payment was made; but after discovering the true nature of the transaction, and that engagements had not been entered into except in one or two cases either to sow the seed or return half the crop, as represented by Rymal, he refused payment when the note fell due and was presented by one named Peter Wood. The wheat had in the meantime been distributed as agreed upon, and in the majority of cases the samples were accepted and sown, although all the prosecuter received after harvest was some three-quarters of a bushel. The wheat turned out to be neither new nor improved, and was in fact merely the old Seneca or Clawson variety, and in some cases the yield did not exceed 18 bushels to the acre, although at least 30 bushels were guaranteed. The prosecuter then proceeded against Rymal, charging him as above, with obtaining money under false pretences; and although the prisoner's counsel contended that the making of the note was not due to the representations of the prisoner, and also that it was too remote a consequence to render him liable under the Act, the County Judge considered it to be the outcome of the defendant's fraudulent and false pretensions, and that on this ground alone he might be convicted. Judgment was given accordingly, sentence being suspended pending a reference of the case by the County Judge to the Judges of the Queen's Bench Division, and the defendant lying in gaol in default of bail for his appearance when required for sentence. The higher court confirmed the conviction.

Dennis v. Currey.—A case tried at Oxford Spring Assizes, February 15, 1889, before Justice Falconbridge. The defendant was described as a man of respectable appearance and bearing evidence of education and intelligence of a high order. He acknowledged having been quite conscious of the obligation he was undertaking. In November, 1886, a man named Perry, representing himself as an agent of the Ontario Seed Grain Co., called on the defendant at his home in Blenheim township, together with an acquaintance named Lapiere. The defendant was induced by these parties to purchase 30 bushels of "White Star" oats, at $15 per bushel, for which he gave his note, and signed a document attested by all parties, setting forth that the Company agreed to *sell* to responsible parties, within one year from date, the proceeds of the defendant's crop when harvested, to the amount of 60 bushels, and to pay the defendant at the rate of $15 per bushel (or $900) for which he agreed to take his pay in notes, less a discount of 33⅓ per cent. on all notes taken for all his oats sold at $15 per bushel, claimed as commission

by the Company for their share in the transaction. By this means the defendant expected to get back a clear profit of about $120, allowing for interest. It was also stipulated that the transaction should be considered of a speculative character, and that it was not based upon the real value of the grain. The defendant sowed the thirty bushels of oats and realised 180 bushels, but, needless to say, the Ontario Seed Grain Co. did not fulfil its agreement to sell 60 bushels of his oats. In the meantime, however, the note was negotiated (although the defendant was given to understand that such would not be the case), and ultimately fell into the hands of the plaintiff, who acquired it for value, and before it became due. A suit to recover was then brought against defendant, who had no remedy, the company having proved a myth, and the plaintiff pleading ignorant of the circumstances connected with the case. Judgement was therefore awarded to the plaintiff for amount of note and interest.

Extracts from Reports.—Hundreds of instances of frauds are given in the reports of correspondents, but those quoted below are a fair index of the whole. The devices are in some cases open and palpable, but in other cases they are of a character calculated to deceive the shrewdest of men.

Lewis Simpson, Dorchester S., Elgin: The greatest fraud imposed on the farmers throughout this county was the Red Lion seed wheat and seed oats swindle. This township alone has suffered a loss of $3,000 by the seed grain frauds.

Wm. Welsh, Huron, Bruce: I have seen six or seven cases where farmers have been badly taken in by accepting agencies. These "agencies," the farmer often finds, are simply a means of working in on the farmer a large order, for which he has given his note. The farmer believes he is merely accepting the agency, but the sharper adroitly substitutes a note ranging from $100 to $400. Only a few cases come to the knowledge of the public, as the parties are thoroughly ashamed at being so simple. The wheat frauds, owing to their peculiar features, have been more public.

Peter Reid, Kinloss, Bruce: There have been some very questionable deals made in pumps. I know of some parties who thought they had ordered one or two, and had one or two dozen sent to them, and had to pay for them too.

John Booth, Normanby, Grey: Orders for grain bags at half price have been taken here, but while the order reappears as a promissory note there are no bags forthcoming.

C. Cross, Innisfil, Simcoe: A number of our farmers have been defrauded by taking agencies. About twenty were taken in on sickle grinders at $30 each, and three or four on hay forks at from $100 to $200 each.

John Darby, Vespra, Simcoe: Several parties here agreed to become agents for the sale of plows and other inplements, as they thought on commission, but found that the agreement signed turned out to be a promissory note for the full value of the goods. The hay fork and sickle grinder swindles were also worked here.

James A. Glen, Westminister, Middlesex: The Red Lion wheat swindle caught some farmers, and has been ventilated in the courts.

E. H. Brown, Nissouri E., Oxford: Hay forks have been used as a means of many fraudulent transactions in this township. One farmer thought he was getting one fork but his order turned out to be for twenty-five, and the forks proved to be worthless and unsaleable.

Alex. McFarlane, Norwich S., Oxford: A young man of my acquaintance signed an order for an iron shelf costing $1 to encircle a stove pipe, and was taken by surprise to find he had one hundred shelves on his hands costing $100.

Thomas Good, Brantford, Brant: A good many farmers were taken in by the "Red Lion" wheat and the "White Star" oats. A few years ago there was a large swindle in fruit trees by an American from Ohio selling the "Wild Goose" plum. He took a large amount of money out of the township. Most of the trees proved useless, and many were dead when they arrived.

Wm. Whitelaw, Guelph, Wellington: Three years ago last March a stylish young gent canvassed this part of the township, having with him a very superior sample of spring wheat, a new variety, he said, which was grown on the shores of Lake Erie, and which would yield from 35 to 40 bushels an acre; and all the farmer was asked to do was to take two or four bushels and give his note, binding himself to return half the produce of such wheat in the fall to a certain named farmer. The bait took, and thirty bushels ordered by certain farmers were to be delivered in a week or two. A few days after a stranger with a democrat waggon came to my place and bought thirty bushels of spring wheat, put in bags of two bushels each. The wheat was taken to Guelph and given over to a third party, who distributed it according to order. The farmer to whom the half of the product was to be delivered gave his note for $180 for the wheat to be received by him. The note was sold to a person in Guelph and that was the last seen or heard of any of the parties. The wheat was the very same that had been grown in the neighborhood for years, and spring wheat being a failure that year the purchaser for $180 lost nearly that amount. The same game was carried on in the township of Waterloo the same year.

Samuel Kennedy, Gainsboro', Lincoln: Some years ago the Bohemian oats and Eldorado wheat frauds were boomed here, but not recently. Lightning rod men also operated here.

George Hart, Saltfleet, Wentworth: This township has not been victimised by any agents since the Bohemian oat fraud and Egyptian wheat swindle. The lesson they received at that time was of a kind to last.

W. B. Terry, Gwillimbury N., York: The seed grain fraud here went under the name of the "Blue Mountain White Wheat."

Simpson Rennie, Scarboro', York: I have known horsemen who, in order to make a sale of fillies offered to buy the first living foal raised at $400; or they have promised to take the fillies back at the end of one year if the purchaser was not satisfied. But did any person ever hear of one taken back pleasantly?

J. C. Dunn, Brighton, Northumberland: The oat and wheat swindle was carried on to a large extent in this township last year, and many more are being led away this year.

James Benson, Ameliasburg, Prince Edward: Some 300 bushels of oats have been sold in this township during the last six or eight months at $10 a bushel, the dealer agreeing to assist the farmer to sell his entire crop of oats at $7.50 per bushel. As the losses heretofore sustained have been slight, this Hulless oats scheme seems to take with the farmers, and a lot of them have been gulled.

W. R. Leavens, Hallowell, Prince Edward: Almost nine out of every ten farmers in this vicinity have been persuaded into giving notes varying from $100 to $500 for Bohemian or Hulless oats. Whether it is a fraud or not remains to be seen. They did as per agreement last year, and say they will do so this year too.

David Moran, Sophiasburg, Prince Edward: I am acquainted with transactions between farmers and the oat men to the extent of nearly $3,000 in Ameliasburg and Sophiasburg.

H. A. Baker, Camden, Lennox and Addington: I cannot tell much of the Hulless oats scheme here, as the fraud has been exposed in the local papers, and some purchasers are ashamed to let it be known that they were taken in. I know of a number who have given their notes for $100 and all the way up to $400 for those Hulless oats within the past year.

George Lott, Richmond, Lennox: The traffic in Hulless oats has but recently begun in this county, and this township has not been much affected. The townships of Ernestown, Adolphustown, the two Fredericksburgs and Amherst Island have been the base of their operations. The amount involved is estimated by some authorities at $30,000, but it is probably over-estimated. Only persons financially sound have been approached. The press of this county has strenuously endeavored to expose the infamous nature of the swindle, and their action has resulted in preventing its continuance.

William Doyle, Osgoode, Carleton: Among others we have had the linen fraud, a wonderful talker who was selling fine linens for less than half price. He said in no case did his firm allow him to take money, and orders for two or three dollars worth turned out to be for so many hundreds.

ANNUAL REPORT

OF THE

BUREAU OF INDUSTRIES

FOR THE

PROVINCE OF ONTARIO

1889.

PART IV.—WAGES AND COST OF LIVING.

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1891.

EIGHTH ANNUAL REPORT

OF THE

BUREAU OF INDUSTRIES.

PART IV.

To the Honorable John Dryden, Minister of Agriculture:

Sir,—I have the honor to submit herewith a report on the Wages and Cost of Living of the working classes in the towns and cities of Ontario, being Part IV of the Report of the Bureau of Industries for 1889.

Your obedient servant,

A. BLUE,

Secretary.

Toronto, March, 1891.

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PART IV.

LABOR, WAGES AND COST OF LIVING.

STATISTICS OF URBAN WAGE EARNERS.

The statistics of the Bureau relating to wages and cost of living of the working classes in Ontario for 1889 have been collected from 39 towns and cities, for which service 33 special agents were employed. The whole number of persons who have supplied information to agents is 3,814, consisting of 3,512 males and 276 females over 16 years of age, and 17 males and 9 females under 16 years. These statistics cover the period of a year for labor, wages earned, and the various items which make up the cost of living. There has been collected from workers besides, the rate of wages per week and the number of hours constituting a week's labor, it being considered desirable to procure this information from employés as well as from employers. But much the greater mass of statistics of weekly wages has been gathered from employers, who in response to requests from the Bureau have made up and returned statements of pay-sheets for one week in the year, showing wages paid and hours employed for each worker according to his or her occupation. The total number of statements thus received is 549, representing 180 towns, and supplying information for 17,328 workers, viz.: 13,315 males and 2,826 females over 16 years of age, and 866 males and 321 females under 16 years. All the statistics obtained from those two sources have been tabulated by the Bureau, and are presented in the following pages, together with summaries of the information gathered by the special agents.

REPORTS OF THE SPECIAL AGENTS.

Relation of Wage-Earners to Employers and Employment.—The following questions touching the industrial, sanitary and social condition of the working classes were placed in the hands of collectors to be reported upon, and the greater part of the replies, together with a summary of the same, are presented:

1. Payment of Wages.—(1.) Is there a fixed pay-day for wages of workers? and what day? (2.) How many pay-days in each month? (3.) Is the full amount of workers' wages paid each pay-day? (4.) What proportion, if any, is reserved by the employer? and for what object is it reserved? (5.) Are wages as a rule paid in cash?

2. Accidents to Workers.—(1.) Are any accidents reported for the year? (2.) How many? and what has been the nature of each? (3.) How many have resulted fatally? how many have resulted in permanent injury? and to what cause were they due in each case? (4.) Is machinery so protected as to prevent accidents, with reasonable care on the part of the workers? (5.) Is the Factories' Act hung up in all manufacturing establishments?

3. Health and Safety of Workers.—(1.) What is the general condition of the health of workers? and how in this respect do in-door and out-door workers compare? (2.) Has any epidemic or contagious disease broken out in the families of workers? and if so, what kind of disease, what were its consequences, and to what is its origin ascribed? (3.) Is there a proper ventilation of workshops or factories? (4.) Are wash-rooms and water-closets provided for the convenience of workers? and separate ones for each sex?

Are they kept in a proper state of cleanliness? (5.) Is the water supply ample and of a good quality for drinking? (6.) Are adequate means of escape provided in case of an outbreak of fire? (7.) Are the doors of factories or shops locked or bolted during working hours? (8.) Are any numbers of children under 14 years of age of either sex, girls from 14 to 18 years, or women employed in factories or shops? If so, how generally are they employed in respect of each of the three classes? and to what cause or causes is their employment ascribed? Is it owing in any degree to the dissipation of fathers of families?

4. Running Time of Shops and Factories.—(1.) Have factories or shops been idle for any part of the year? and if so, how long and for what cause? (2.) Have workers been idle for any cause except the closing of factories or shops, or (in the case of out-door trades) the state of the weather? Have they been able, as a rule, to find steady employment? (3.) Is it the custom to keep factories, shops, etc., open the same number of hours for each day of the week? If any portion of Saturday is given to workers, how much? and are the full day's wages allowed?

5. Short Hours of Labor.—(1.) In what trades (if any) have the hours of daily or weekly labor been shortened during the year? and to what extent have they been shortened per day or week? (2.) What have been the results to workmen (*a*) as to reducing the number of persons out of employment; (*b*) as to increasing the number of days employed during the year; (*c*) as to conduct and character? (3.) State whether it is regarded as an advantage to the working classes to shorten the hours of daily labor and increase the number of days employed in the year, and the respects in which it is advantageous, or otherwise. Does it tend to insure a livelihood for the family throughout the year and to promote economy of living, or does it in any degree tend to idle and dissipating habits? (4.) In what way do workers improve the opportunity afforded by the shorter hours of daily labor?

6. Industrial Strikes or Lock-outs.—(1.) Have any strikes or lock-outs occurred during the year and if so, what trades have been affected by them? (2.) What was the cause in each case? and if settled, upon what terms and through what agency—arbitration, conciliation, or otherwise? (3.) How many workers were affected in each case? how long were they out of employment? and what amount of earnings was lost in consequence?

7. Organized Labor.—(1.) Is labor organized in your town? if so, how many organizations are there, how many members are enrolled in each, and what trades or occupations do they represent? (2.) Is female labor organized as well as male, and are there separate organizations? Give details as to number, membership and occupation? (3.) What has been the effect (if any) of organization on the rate of wages? (4.) What part (if any) has organized labor taken in strikes or lock-outs? (5.) How much has been expended by each organization on strikes and lock-outs—(*a*) In your own town; (*b*) In all other places? (6.) How much has been expended for benevolent purposes?

8. Reading-Rooms and Libraries.—(1.) How many reading-rooms or libraries in your town? (2.) How long have they been established and how are they maintained? (3.) During what hours are they open, and to what extent are they patronized by the working classes?

9. Special Subjects.—Report on any special subject of interest to the working classes in your town in addition to the foregoing, and suggest any topics which you consider to be worthy of future enquiry.

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1. Payment of Wages.—The year has seen but little change in the matter of the payment of wages. A fixed pay-day is the rule, and Saturday is most frequently selected, while many firms pay on Friday and others on Monday or Tuesday. There appears to be a growing tendency in the direction of fortnightly pay-days, although weekly payments are still common, and many large concerns, more especially the railways, pay only once a month. Several instances are mentioned where a few days' wages are retained, as the collectors aver, to compel due notice being given by the workman before quitting his employment; but in the case of the railways it is generally admitted that the checking of the pay-rolls at the head offices necessitates all wages from the first of the month to the time of the arrival of the pay-car (varying from ten to twenty days) being withheld. Piece workers also have from one to three days' earnings kept back so as to enable book-keepers to get the pay-lists ready. Wages are generally paid in cash. While the London collector states that about a dozen firms still pay partly by store orders, the general testimony is that the plan is seldom practised now, and the Perth collector states that "no other system would be tolerated."

Almonte: Pay-day at the woollen mill is on the 15th of every month; except when that date comes on Saturday or Sunday, and then it is the Monday following. On each pay-day the pay is made up to the last day of the month previous for all work done in that month, and whatever is due is paid.

Aylmer: In the manufacturing establishments there is a regular weekly or fortnightly pay-day, and Saturday is generally the day for paying wages. Where piece work prevails, one week's wages is kept back for convenience in book-keeping. In the building trades there is no fixed pay-day, bosses paying from time to time as they draw money on the contract. Wages as a rule are paid in cash unless otherwise agreed upon.

Berlin, Waterloo, Preston, Hespeler and St. George: In the above places visited by your correspondent fixed pay-days are the rule, but the day and date vary. In two industries in this group of manufacturing centres the employés are sometimes compelled to wait for months for the major portion of their earnings. Fortnightly pay-day is the rule, although the textile industries in Preston and Waterloo and the agricultural works in St. George and Preston have monthly pay-days. As a rule day-workers are paid in full. In some cases one day's and in a very few one week's pay is kept back. Piece workers are not paid in full, owing to the system under which they work. They are unable to complete their work at all times to suit the convenience of their pay-day. Wages are generally paid in cash.

Brantford: Usually two pay-days occur in each month, although there are workshops where but one pay day in each month is recognised. From seven to fifteen days' pay is retained by the company or employer. The object they have in view, as I understand it, is to compel the employés to give six, fifteen or thirty days' notice before leaving. But while the company takes this advantage of their work-people they do not give them one, two or four weeks' notice, but stop any of the employés at pleasure without a minute's notice. Wages are always paid in cash.

Brockville: The smaller concerns pay weekly and the larger ones fortnightly, on Saturday. The railway companies pay monthly, about the 17th. All wages are paid in cash.

Carelton Place: There is a fixed pay-day here—the 15th day of each month. The full amount of the worker's wages for the last month is paid, but the money from the 1st to the 15th is retained so that the employés shall give two weeks' notice on leaving. Wages are paid in cash.

Chatham: Wages are paid in most cases weekly, on Saturday, Friday or Monday. No money is held back except in the case of apprentices in the carriage works, from whom $25 to $45 is retained until the end of the third year.

Cobourg: There is a fixed day for the woollen mill, the 10th of every month, and the hands are paid the full amount of their wages. The employés of the car works are paid every two weeks. The matting factory is paid any day after the 1st and 15th of every month, but there is no stated day, which leads to a great deal of inconvenience. In every instance wages are paid in cash.

Cornwall: Tuesdays, Wednesdays and Saturdays are the pay-days. Two cotton companies pay every two weeks, and one cotton company and the paper mill twice in each month. The full amount of wages is not paid each pay-day. The Cornwall Manufacturing company reserves fourteen days, the Canada Cotton company fifteen and the Stormont company twelve. The object is supposed to be to make the employés give two weeks' notice. I cannot learn of any instances where wages are paid in anything else but cash.

Galt: Tuesday, Friday and Saturday are the days on which wages are generally paid, and the usual period is fortnightly. From one to four days' wages are reserved by the employers, as it is more convenient to have the pay-sheet made up and wages ready to hand out, and it also prevents hands leaving without giving notice. Wages are paid in cash.

Gananoque: Some pay on Saturday, some on Monday and one concern pays on Tuesday. There are generally four pay-days in a month, but one firm has but two. The full amount of wages is paid in cash, except in the case of one establishment.

Guelph: In those places where workers are paid every two weeks they are paid on Fridays. There are a few industries where they are paid twice a month on fixed days of the month. When these days fall on Sunday the wages are paid on the following Monday. The full amount of the worker's wages is handed over each pay-day, except at one place where the work is exceptionally hard, and a week's wages is held back as a guarantee that the men will not leave without notice. Cash is paid without exception.

Hamilton: In all the industries of this city a fixed pay-day exists, but the day varies. Saturday is generally selected. Fortnightly pay-days is the rule in all the building trades, and in a large percentage of the other industries, including the shoe, textile, iron and tobacco factories. The Grand Trunk railway has monthly pay-days. In the building trades the workman's time is made up to Friday night, leaving one day's pay. This rule is followed in many other trades, while some industries retain a week's and some two weeks' pay. In the glass factories a certain percentage of the wages of the skilled workmen is retained, and is paid over when the factories close in July. All are paid in cash.

Kingston: Each industry represented has a fixed pay-day, and while not uniform, Friday and Saturday are the most general. Weekly, fortnightly and monthly payments are usually made in cash. About a week's pay is generally kept back to prevent the workman from leaving without giving due notice, although as a rule the employer reserves the right to discharge or lay off indefinitely, without notice, an employé, and in some instances retains the wages for a week after the discharge.

Lindsay: There is a fixed pay-day as a general rule, Saturday being the day preferred. The railroad men are paid on the 17th of each month, but with this exception there are generally four pay-days in a month. Some manufacturers pay in full when business is good and money is plentiful, and at other times when money is scarce they cannot pay in full, although all back moneys are usually paid in full later on to the satisfaction of the worker. The railway men are paid to the 1st of each month, leaving a balance of seventeen days' back money. This is accounted for by the pay-sheet having to be made out and sent to Montreal, and the pay car reaching here about the 17th of each month. Wages are generally paid in cash.

Listowel: There are fixed pay-days in Listowel, but each firm has its own particular day. In the furniture factory it is every second Saturday, and in the flouring mill the 15th and 30th of each month. The rest of the firms pay in full every Saturday. As far as I know the full amount of wages is paid, except in Hess Bros.' factory, where they keep back the first week's wages. It is reserved so that the wage earner cannot leave just when he likes, and in case he should by carelessness spoil any furniture he is making the firm will have enough for the damage. Wages are paid in cash.

London: The railways pay once a month. Most of the firms employing a large number of hands pay once every two weeks. A number of employers pay their hands weekly. Some pay on Friday, others on Saturday, and a few on Monday. The G. T. R. keeps twelve days' pay, and the dues of the Provident Society (which every employé is compelled to join) are kept back also. At McClary's foundry three days' pay is held back. Wages as a rule are paid in cash. I came across only about half a dozen firms who paid partly by store orders.

Orillia: There are regular pay-days, in some cases weekly and in others fortnightly.

Oshawa: There are regular pay-days here, usually weekly. In some cases two days', and in others a week's pay is held back for the purpose of balancing up piece-work accounts.

Owen Sound: There are two pay-days in nearly every instance, and Saturday is the pay-day in all places but two. Only the shipyards and the railway reserve any portion of the wages. In these cases a few days' wages are held back, on account of the pay-sheets having to be sent to the head office.

Perth: Wages are all paid in full on Saturday of each week in all small shops. The C. P. R. car works, the largest industry here, pays on the 20th of each month, and the money due for the days from the 1st to pay-day is withheld. This is done to allow time for the pay-rolls to be sent to the head office at Montreal before the pay-car sets out on the road. The knitting factory employés are paid on the 5th of each month, five days being retained. Wages are all paid in cash. No other system would be tolerated.

Peterborough: As a rule there is a fixed pay-day. In the large establishments they make it a rule to pay every two weeks, but in the smaller concerns they pay every

week, and generally on Saturday night. The full amount is usually paid. Wages are always paid in cash, as the old custom of trading is done away with.

St. Catharines and vicinity: Weekly, fortnightly and monthly pay-days exist. I only know of one factory (the knife works) that does not pay in full. The men get what they ask for, and leave the balance in the hands of the firm till the shop closes down in the spring.

St. Thomas: The Michigan Central railway pays on the 6th and the Grand Trunk on the 16th of each month. Most of the shops and factories pay on Saturday and some on Monday, either weekly or every two weeks. The M. C. railway reserves six days and the G. T. R. sixteen. The pay-roll is made up to the end of the month, as it is claimed that it takes that much time to get the roll certified to by the officials and the pay-car to reach this section. Those factories paying on Saturday usually pay in full.

Stratford: There are fixed pay-days in all the industries, but the days vary. In the majority of cases there are four pay-days in each month, invariably on Friday or Saturday. The G. T. R. shops pay on or about the 19th of each month, and the time worked from the 1st of the month until pay-day is held back. Only in a few shops outside of the G. T. R. is any part of the wages held back. The rule is to pay wages in cash.

Toronto: There is a fixed pay-day as a rule, and Friday, Saturday and Monday (in the order named) are the days most frequently chosen for that purpose. Wages are mostly paid weekly, although in many cases still fortnightly or monthly. With some few exceptions, wages in this city are paid in full. In nearly all large establishments, and in many that are not large, a sum varying in amount from three days' to two weeks' pay is kept back by the employer from the first earnings of the employés, but the reasons given for this practice are not always well understood by the men, and it is certain that the actual reasons are not always given by the employer. An opinion prevails among the men that it is only a scheme to obtain money without interest and carry on the business with the capital that really belongs to the employés. Attention is invited to one case where three days' pay is kept back from the first week's earnings of every employé to ensure his constant attendance. Should he afterwards stay away from his work for one day or more he is fined that amount, and on recommencing work a further sum representing three days' pay is again stopped from his first week's earnings. The men in this establishment work every day in the year, Sundays and holidays included. Wages as a rule are paid in cash, and this, together with the fact that they are paid weekly so much more than was formerly the case, is believed to be almost entirely owing to the more complete organisation of labor.

Woodstock: Nearly all the employers of labor have a regular day for paying their employés. Most of the larger establishments pay every two weeks, some of them on every alternate Tuesday and others on every alternate Friday. Some of the building trades pay every week on either Friday or Saturday. As a rule the full amount of wages is paid to within one or two days of the pay-day, to enable the books to be made up. One large establishment keeps back a sufficient amount of earnings to pay the premiums of a mutual benefit society for insurance against accident, the proprietors being the custodians of the funds, but I believe membership in this society is optional and not a condition of service. One firm employs a number of piece-workers who are paid only a certain percentage as the work progresses, which sometimes results in an apparent injustice. Wages as a rule are paid in cash; the exceptions are only such cases as may be to the mutual benefit of employer and employé.

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2. Accidents to Workers.—Accidents have occurred in nearly every place reporting, the greater number being of a minor character. There have been but few fatal accidents except on railways, where a number of brakemen were killed while on duty. In the factories, circular saws, planers and shapers still maintain their reputation as dangerous machines. It is also claimed that the lads attending tin-stamping machines have a very hazardous task. Breaking ladders and falling scaffolding are reported as causing

serious accidents in Kingston. Exploding stills have been the most common cause of accident to workers in the Petrolia region. The general testimony is that machinery is as well protected as is consistent with utility. Many of the accidents were either the result of carelessness on the part of operatives, or recklessness in attempting to clean machinery while in motion. Putting green hands to manage dangerous machines is also given as the cause of several accidents. The London collector condemns the practice in some factories of compelling a man or boy to attend to two machines at the one time. The Factories' Act is generally found posted up in the establishments where children and females under eighteen years of age are at work, (the name and address of the Inspector is all that is required to be posted up where these classes of workers are not employed). While a few collectors would like to see more done by the inspectors, several report that good has been accomplished by the visits of these officials, and the Brantford collector states that "The Factories' Act is without doubt one of the best Acts that was ever passed for the wage-earner."

Aylmer: I have only one serious accident to report, which resulted in the loss of an eye, occasioned by one of the knives of the shaper flying out. No blame was attached to any one. Machinery is fairly well protected.

Berlin, Waterloo, Preston, Hespeler and St. George: Very few accidents have been reported, and none of a serious nature. The most serious is the loss of a finger, which has occurred on one or two occasions in the button works by the hand coming in contact with the buzz-saw while sawing the ivory nut used to make the button. Carelessness is given as the cause of most of the accidents. Machinery is reported to be well protected generally and many employés have expressed themselves very favorably as to the benefits derived from the Ontario Factories' Act, while a few complain of needed protection, particularly in cabinet factories and planing mills where the saw and buzz planer and the dangerous shaper are used. The Factories' Act is not hung up in all the factories. Some workmen report having never seen the Act or the Inspector about the place, but others report that the Inspector has visited and that much good has resulted; reforms having been made and evils adjusted as the outcome of his visit.

Brantford: Accidents frequently happen in this city. As many as twelve are reported. Two of them resulted in death. One was caused by the bursting of an emery wheel, and one was the result of carelessness. As a rule, the machinery is protected as far as is consistent with its utility. The Factories' Act is, without doubt, one of the best acts that was ever passed for the wage earner.

Brockville: No accidents are reported in any of the factories. There were two of a serious character on the Grand Trunk Railway, one of which resulted in the death of a brakeman and the other in the maiming of a fireman. Both were due to carelessness. Machinery in factories is well protected and the Factories' Act is hung up therein.

Cornwall: There have been a number of accidents during the year. They were mostly of a minor kind, resulting in the loss of fingers, and in one case the hand of a man was badly crushed. There was one fatal accident during the year; a man getting caught in the extractor in the Cornwall manufacturing company's mill. The cause of the greater part of them was cleaning machinery while in motion. Machinery is fairly well protected and with care there is not much danger. The Factories' Act is hung up in all manufacturing establishments.

Galt: There have been a dozen or more accidents. From one-third to one-half of them happened with circular saws; several men losing the end of a finger and some having a hand torn. No fatal accidents occurred. Six weeks was the longest time lost by any worker meeting with an accident. Machinery is generally well protected. The Factories' Act is not hung up in all manufacturing establishments.

Gananoque: There have been no accidents worth reporting. The Factories' Act is posted in some of the shops and factories, but not in all.

Guelph: There have been a number of accidents during the year; some of them serious in their results. Three occurred on the railway. In one case death was caused

by the brakeman sitting on the brake and the sudden start throwing him off. The train passed over him, cutting him to pieces. The second was caused by the man slipping off the car with the same result. In the third case a brakeman coupling cars got caught by his heel in an unprotected frog: his legs were amputated and death resulted in half an hour. It must be stated, however, that the evidence showed that it was not his work to couple cars, but that it had been done voluntarily by him. The assistant engineer at the water-works while cleaning the engine leaned over the slide valve when his foot slipped: he put out his hand to save himself and lost three of his fingers, besides injuring the little finger. There were some minor accidents with shapers in wood-working shops: cause, carelessness. Machinery is fairly protected. The Factories' Act is hung up in all manufacturing establishments.

Hamilton: A few accidents are reported for the year. Two are reported from the tin stamping works among boys employed on the stamping presses, which appears to be very dangerous employment. Two are reported in the Ontario rolling mills, but none are more serious than the loss of a finger or a broken limb. One fatal accident is reported at Beer's brick yard: a man was employed getting out clay when the bank fell in on him, killing him instantly. A general improvement in machinery in the way of protection to workers is reported. The Factories' Act has had a beneficial influence in this direction. A large number of factories report having the address of the factories inspector hung up, but none have reported the Act being displayed, and numerous enquiries are made regarding the absence of the Act in these places.

Kingston: Several accidents are reported, three serious, from breaking ladders and falling scaffolds. There have been a host of minor accidents, such as loss of fingers, etc., in nearly every instance the result of carelessness, indifference or unnecessary effort. Railway trains and steamboats have been responsible for a large part of the injury. One man was killed outright by a train; one lost both legs, another an arm. One man was drowned off a steamboat in the harbor, being knocked off by a buggy which had not been properly stayed or blocked. Machinery is fairly well protected; still in many places much thought and care are required on the part of workmen to prevent accidents. There is much room for improvement with respect to the proper posting of the Factories' Act and its better enforcement.

Lindsay: We have had three accidents, one fatal and three resulting in permanent injury. One man lost his life by an explosion in a shingle mill; one man lost three fingers in a shingle mill and the third accident was caused by a threshing machine. The cause for some of these accidents was the placing of men in charge of machinery who did not understand their business. Machinery, in some cases, is well protected so as to prevent accidents with reasonable care, but in other cases it is not.

Listowel: There have been three or four accidents, principally fingers cut off by saws, and generally the result of carelessness. Machinery is protected so as to prevent accidents, with reasonable care on the part of workers.

London: There have been quite a number of accidents in this city during the year, but as I have not kept a record it would be impossible for me to give a correct statement. At one factory where a number of boys are employed attending to stamping machines accidents are frequent. Several of the lads got their hands crippled this year. Besides these, I have heard of at least ten other accidents to workers. Three were moulders who received burns from hot metal. A boy got one of his hands cut off in a paper machine. Another case was that of a young man who was working on the C. P. R. extension through this city. He was doing something to the steam shovel when his mate started the machine without looking to see whether or not he was clear, with the result that the man had both his hands cut off at the wrists. A man in the London furniture factory lost part of three fingers. Two men were injured in the sash and door factory, one having all the fingers of one hand cut off and the other losing the ends of two fingers. Two men were killed, both of them employés of the G. T. R. One was an engineer who was crushed and killed instantly between the corner of a car and a projecting coal shed while standing at the bottom step of the front platform, riding up the yard. The other was a

brakeman, who had both legs cut off at the hips, and was dead when picked up. Machinery is fairly well protected, with the exception of some of the wood working machines and the stamping presses. I think that if the hands are properly instructed and are careful, they will be, comparatively speaking, safe. They have a bad habit in some machine shops of compelling one man or boy to take charge of two machines at one time, which I think is not a safe plan and should be put a stop to. The Factories' Act is not hung up in all manufacturing establishments.

Orillia: There have been two accidents to workers during the year. Carelessness was the cause of both. Machinery is well protected. The Factories' Act is hung up in all manufacturing establishments.

Oshawa: There have been four accidents: two burns in the malleable iron shop, one hand jammed in Coulthard's, one foot crushed by a bar of pig iron falling on it in the Masson works. None resulted in permanent or fatal injury. Machinery is fairly protected and the Factories' Act is hung up in all manufacturing establishments.

Owen Sound: Two men had each a hand crushed in the machinery at the Polson works. In one case amputation was necessary and in the other the hand is of little or no use. It was purely accidental in both cases. Both of the men were in the accident insurance, and both received their money in full. Machinery is thoroughly protected and the Factories' Act is hung up in manufacturing establishments.

Perth: There have been several accidents here during the year, the operators of wood-working machines being the victims in all cases but one, that one having his thumb cut off by a bolt cutting machine. No fatal injuries were received. The principal cause of accidents here is the employment of inexperienced hands and carelessnes on their part. Machinery is not well protected in this town. The Factories' Act is a dead letter here.

Peterborough: There were two accidents in the bridge works, one resulting fatally and the other causing the loss of two fingers. The fatal accident was caused by the breaking of a plank in loading heavy pipes on the cars. There were other accidents of small account. Machinery is protected as a rule. The inspector calls around occasionally and that makes employers more careful. The Factories' Act is posted up in all shops I have been in.

Petrolia: There were two accidents, not serious, however, through the explosion of a still. Every precaution appears to be taken to make machinery as safe as possible. The greatest danger is from the explosion of stills. I have not seen the Factories' Act hung up in any manufacturing establishment, nor can I find that any employer has such Act in his possession.

St. Catharines and vicinity: Only one serious accident has occurred in this city. A man fell from a stage into Shickluna's dry dock and is now in the hospital in a critical condition. Machinery is fairly well protected. The Factories' Act is hung up in all the manufacturing establishments I have been in. At Niagara Falls, on the Michigan Central railway, two men were killed by being run over, two lost a hand each coupling cars, one lost three fingers, one lost the toes of one foot, one got his foot smashed, and one was blown off the top of the cars and killed. Two were killed on the G. T. R. at Merritton tunnel and three were seriously hurt in a collision. There have been a great many more accidents on these roads, but the employés appear to be afraid to give the information; neither will they state their reasons for not giving it. They seem to be afraid that they will be discharged if it is found out that they tell anything that happens in the way of accidents, etc.

St. Thomas: One man was killed in Still's factory by a piece of wood flying from a buzz saw, and two boys lost some fingers in Heard's factory by a planer, which they declare occurred through their own carelessness. There were also some cases of men getting their fingers hurt while coupling cars. As far as I can understand and get information machinery is as well protected as is possible. If all railways were equipped with automatic couplers it would lessen the danger in coupling cars. The Factories' Act is to be found hung up in manufacturing establishments.

Stratford: Five accidents have occurred; one loss of arm and one arm badly torn by a picker in a shoddy mill. The rest have been squeezed hands in coupling cars and have not been serious. None have been fatal, but one resulted in permanent injury. The cause was carelessness on the part of the injured man. Machinery is well protected. The Factories' Act is hung up in all large shops.

Toronto: We have heard of only five cases of accident to workers during the year. One of these, which occurred early in December, was occasioned by the breaking of a shaper, a portion of which struck a man heavily in the face, inflicting a terrible wound. The other four were caused by circular saws; in one instance resulting in the loss of a finger and in the other three in the loss of two fingers. In accounting for these accidents our informants, whilst readily acquitting the employers from all blame, were unwilling to ascribe them to the carelessness of the men. Machinery is in most instances reasonably protected and the Factories' Act was found hung up in nearly all the large factories visited.

Whitby: There have been three accidents; two from a drop hammer and one from a shaper. Machinery appears to be adequately protected. The Factories' Act is hung up in factories and workshops employing a sufficient number of hands.

Woodstock: There have been the usual number of accidents, chiefly in the furniture and organ factories. In the great majority of cases they were of a minor character. One person had an arm amputated, but very few were injueed sufficiently to render it necessary to give up their regular occupation. None have resulted fatally. The accidents were caused mainly through carelessness on the part of the injured persons, and in one case by putting a green hand to work on a rather complicated machine. Machinery, as a general thing, seems to be about as well protected as is consistent with its usefulness. The abstract of the Factories' Act is hung up in all factories.

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3. Health and Safety of Workers.—Collectors report that the general health of workers has been good, and while two or three state that there is no appreciable difference between the two classes the majority hold to the opinion that out-door workers enjoy better health than those engaged in in-door occupations. Improved ventilation is doing much for in-door toilers, a marked advance in this department of sanitary work being reported from several manufacturing centres. No epidemics or contagious diseases peculiar to work people or their families are reported. In London families of workingmen living in the outskirts of the city suffered from bad water and lack of sewerage, a state of things that is now being remedied. Chatham is also rejoicing in an improved water supply, a need long felt by all classes there, but especially by working folk. While the Guelph collector makes the proud boast that the water supply of that city is said to be the purest in the Dominion, and a dozen other places claim that there is an abundance of good water for domestic purposes, a different story comes from Aylmer, Lindsay, St. Thomas and Woodstock, where the general water supply is condemned. La grippe caused many workers to be laid off for five or six days, and some for a longer period, but of course this visitation was not confined to a single class of the community. In only a few of the larger places do wash-rooms appear to be provided for employés, but in the majority of cases separate water-closets are placed at the disposal of the sexes. In tailoring shops, however, there is much room for improvement in the matter of accommodation for males and females separately. As a rule, water-closets are kept clean, and where this is not the case it is more frequently the fault of the employés than of the management. In most factories over two stories in height fire escapes are provided, but opinion is divided as to the safety of the average factory in case of a fire. The practice of locking factories during working hours is not general, but it is observed in a few establishments in Berlin, Guelph and Toronto, while in the Grand Trunk workshops at London the gates of the yard are locked and all ingress or egress during working hours must be through the office. Some of the collectors assert that children under fourteen years of age are still employed in factories, but this is a matter difficult to prove and hard to completely remedy. It is clear from the reports, however, that matters have greatly improved in this respect of late. Large numbers of girls and women are engaged in various callings, and woman's sphere as

a worker is continually widening; females being reported in the finishing room of a furniture factory, and in rattan works. Some collectors appear disposed to resent the enquiry as to whether the employment of girls from fourteen to eighteen years and women is owing in any degree to the dissipation of fathers of families. While in a few instances the irregular habits of heads of families may be the reason, the low rate of wages in proportion to the cost of living is given as the chief cause of so many young people and women being employed.

Aylmer: The general health of both in-door and out-door workers is good, with the exception of sewing girls, their health being often impaired during busy seasons by working too long and too steadily. There have been no epidemic or contagious diseases during the year, but there have been some cases of malarial fever, due no doubt to impure water. Suitable washing accommodation is provided where necessary. Water closets are not always kept in a wholesome condition, there being no sewers and dry earth closets not being compulsory. The town has no public supply of water for drinking purposes. The doors of factories are not locked during working hours. There are quite a number of children under fourteen years of age employed in the canning works here, but it is only for a short time during the green pease season, when the work is out of doors and is not considered a hardship. The Aylmer canning company is the only factory which employs any considerable number of women and girls, and no children under fourteen are working in the factory proper. The employment of girls and women is not, as a rule, from any dissipation of parents. In many cases the women are widows and the girls daughters of widows who must work at something for a living. Other girls work that they may assist their parents, whose wages are not always sufficient to provide the family with even the necessaries of life.

Berlin, Waterloo, Preston and Hespeler: The general health of workers for the year has been good, and in-door workers compare very favorably with those engaged in outside occupations. There are many complaints of imperfect ventilation in shops and factories, but the general condition is fair. Wash-rooms are not, as a rule, provided for either sex, and in but few cases, where male and female workers are employed, are separate water-closets provided for each sex, while in many cases there is not sufficient privacy to the closets. They are usually kept clean, but could be greatly improved upon. The water supply is plentiful and of good quality, except during the dry season, when quantity and quality are reduced. In some factories fire escapes are attached to the buildings. In but one or two cases are factories or workshops reported with locked doors during working hours, and then only for a short time after 7 a.m. and 1 p.m., when it is done to punish employés who practise coming late to work. It is reported in Hespeler that there are young girls under fourteen employed in the mills. Fear of discharge, etc., prevented much information being given on this matter by the employés.

Brantford: The health of workers is generally good. Out-door workers are, as a rule, in better health than in-door. There are generally good private conveniences in factories where there are females employed, but I do not know of a single instance where wash-rooms are provided when there is no female help. The factories and shops in this city are well provided in case of fire. I do not know of a single instance of a factory or shop having the doors locked. It is stated that a number of children under fourteen years of age are working. In my opinion minors are set to work mainly on account of having worthless parents; but there are a number of young women at work because they prefer to earn their own living rather than be dependent for support.

Brockville: The general condition of the health of workers is good. The difference, which is not great, is of course in favor of the out-door worker. La grippe affected workers to a considerable extent, but not specially as a class. There are no wash rooms, but separate water-closets are provided for the sexes. There are a number of women employed at the glove works, as well as at tailoring, dressmaking and like employment.

Carleton Place: The health of workers is very good. No wash-rooms are provided, but there are closets for each sex. The doors are always open during working hours. There are a few girls from fourteen to eighteen years of age working in order to assist in the support of the family.

Chatham: The condition of the health of workers is good in all the principal manufacturing industries, but the general opinion is that out-door workers have the best of it. In most of the factories ventilation is good. There is room for improvement regarding the condition of closets. The whole of the water in this district is not above suspicion. There are good facilities for escape in case of fire and doors are not bolted in any case. From what I have been told some immediate action should be taken to provide for the health and well-being of young women in tailoring establishments. In these shops it is quite as necessary as in factories to have separate closets for each sex. The obvious delicacy which stands in the way of these young women and interferes with their personal comfort and freedom should be removed, as it has been discovered by medical men that many cases of serious illness are due to this evil. I am pleased to state that a good system of ventilation now prevails in one of our large blacksmithing industries of which I had to make some complaint in last year's report. But in another case I found that the premises were not kept properly heated and their employés were exposed to draughts, resulting in colds, etc. We have an efficient board of health, and they are endeavoring to adopt a system of disinfection to be approved of by the local medical association and have its regulations enforced by law. I might also mention that before the end of the year the Chatham water works, which we have looked for with longing eyes, will be a reality.

Cornwall: The general health of workers is very good, and in my opinion the health of in-door workers compares favorably with that of those employed outside. There have been no contagious diseases or epidemics, except la grippe, which attacked all classes. Workshops and factories are fairly well ventilated. Separate closets are provided for each sex and are kept in a moderate state of cleanliness. Some of the factories have separate wash-rooms but others have no wash-rooms at all, and in all cases there seems to be a disposition on the part of the management to abolish the privilege of washing in the mills. The water supply is plentiful and of moderate quality. The general feeling among the employés of the factories is that the means of escape in case of fire are totally inadequate. Doors of factories and workshops are not locked during working hours. There are a number of boys under fourteen years employed in the factories, and girls and women are employed in the factories and shops. I think it cannot be justly stated that they are so employed because of the dissipation of the fathers.

Galt: The general health of workers has been good. Out-door workers are more robust, and, take them as a rule, have better health than in-door workers. Ventilation of workshops is generally good. The water is good and there is plenty of it. The fire escape might be improved in several cases, but it is generally adequate. The doors are not locked; they generally open into yards and workers have free access to and from them. There are very few, if any, working under fourteen years of age. There are a few girls between fourteen and eighteen years, but the majority are over eighteen

Gananoque: From personal observation I would say that the operatives in our factories do not seem to have as good health as those employed out of doors. Two of our factories have very bad ventilation. So many establishments are run by water that there is no accumulation of excreta, as it is carried away by the current. There are no fire-escapes specially constructed for that purpose. Very few, if any, children under fourteen years of age are working, but boys, girls and women are employed to a considerable extent. Many children are employed who have dissipated fathers, but it is reasonably certain that they would seek employment if their fathers were temperate.

Guelph: The health of workers is fairly good. It is generally conceded that out-door workers enjoy the best health. In some shops where a high temperature is necessary workers suffer from colds caused by the rapid change of temperature from in-doors to out-doors, as they often pass into the open air to reach closets. Disease of any kind has not specially prevailed in the homes of workers. There are separate closets but not separate wash-rooms for the sexes. It is claimed that the water supply of Guelph is the purest in the Dominion. The doors of workshops are not locked except in the case of Armstrong's carriage works, where they are locked and bolted all day. There are a few boys and girls employed under age, but not to any extent.

Hamilton: The health of workers has been very favorable during the year, and the difference between in-door and out-door workers is very small. A general improvement in ventilation and sanitary regulations is being gradually effected. Water-closets are provided for workers, and as a rule separate ones for each sex where both are employed. An exception may be mentioned in one or two cigar factories, where in one case no closets are provided for either sex, they having to depend upon the neighboring closets when required. The same closet is used by both sexes in one cigar factory and in some small shops where clothing is manufactured—"sweat shops," as they are called, where the family also use the same. A fair state of cleanliness is reported. The water-closets of the Ontario cotton mill were condemned by the board of health, and a practical plumber recommended improvements which the superintendent promised to have done. In many cases where uncleanliness is reported considerable blame can be attached to the workers themselves. With a little care and cleanliness on their part the employers would be encouraged to better their surroundings. Water is of excellent quality and there is an abundant supply.

Kingston: The general condition of health among workers is not what it should be and the causes are legion—bad water, bad ventilation, etc. Wash-rooms are not provided as a rule, and some workers are not inclined to take advantage of such as are provided. Our water for domestic uses is not what it should be, either as regards the general supply or quality. Most of our workshops are provided with means of escape in time of fire, but our cotton mill is said to be a veritable fire trap. The law with regard to age is evaded and needs sharper attention. The employment of girls and women is not occasioned so much by dissipation of fathers as by the greed of capitalists.

Lindsay: Water-closets are provided for workers, but in some cases they are not well kept. We have no drinking water except from wells, and in some cases have to go half a block for it. We have a few girls under eighteen years of age, and about 150 women are employed in factories. This is caused by their fathers not receiving steady employment, and in some cases not receiving high enough wages.

Listowel: The health of workers has been good. There are no wash-rooms. There are water-closets in Hess Bros.' factory, but those of the other factories are placed outside. There are separate ones for each sex and they are kept clean. There are fire-escapes on Hess Bros.' factory, but none on any other manufacturing establishment. The doors of the Hess concern are locked during working hours. There are no children working under fourteen years of age. Girls from eighteen up are to be found in the finishing room of the furniture factory rubbing, as well as in the woollen mill and cigar factory. Their employment is not caused by the dissipation of fathers.

London: The health of workers has been very good. I believe that the people who work out-doors are healthier than in-door workers. There was a good deal of malaria, typhoid fever and diphtheria among the working people who live in some of the low-lying parts of the city. There were about fifteen deaths. The city board of health attributes this condition of affairs to three causes: first, drinking impure water, as they were nearly all on streets where they could not get city water; second, the habit some people have of throwing slops, etc., around their premises in the winter and which, if not cleared away in the spring, ferments and breeds fever, and third, the want of a proper drainage system. An extension of the water system has been decided upon, which will enable nearly every one to get a pure water supply and improve the drainage. There appears to be a proper ventilation of shops. There are not many wash-rooms to be found, but factories and workshops are well provided with water-closets, and except in one or two cases separate accommodation is offered the sexes. In the factories and shops the water supplied is good and there is plenty of it. I do not consider that adequate provision is made for escape in case of fire, although some of the workmen believe otherwise. I found only three cases where they lock the doors of the factory when the hands are in the building. At the Grand Trunk railway works the gate is bolted during working hours, but the doors of the different workshops are open to the yard. When any of the hands wish to go out of the works they have to get an order from their foreman and go out

through the office. There are very few children employed under fourteen years of age but there are scores of girls from fourteen upwards, as well as a number of women, some of whom are widows. The working classes of this city are very steady, and not much given to dissipation. The reason most girls and women have to go to work is because their fathers, brothers or husbands, as the case may be, cannot earn enough to feed and clothe them, and so they have to help to gain the family income.

Orillia: The health of wage-earners has been generally good. The ventilation of workshops is quite satisfactory. There are no wash-rooms, but water-closets are provided and due cleanliness is observed. Only men are employed in our factories. There is an ample supply of good water.

Oshawa: The health of workers in the malleable shops has not been very good, on account of the severity of the labor, lack of proper ventilation and the changes from inside to outside work while over-heated. In-door workers cannot compare with out-door workers for health. Ventilation has been improved since last year, but it is still poor in the tailoring shops and the works mentioned above. There are a few boys under fourteen years of age working in the malleable and piano works, but in most cases they are the sons of widows.

Perth: The general condition of the health of workers here is first-class. The in-door workers have enjoyed better health than the out-door workers, as they have taken better care of themselves, and being protected from exposure to the weather are less liable to lung diseases. All the factories and workshops here are well ventilated. There are no children under fourteen years employed in any factories or shops here, as there is an abundance of adult help at low wages. Girls from fourteen to eighteen years are employed in the knitting factory. The employment of these girls is largely due to the fact that they are members of large families, the fathers' wages being insufficient for the support of all. It is not owing in any way to the dissipation of parents.

Peterborough: The general condition of workers is good as regards health. There does not appear to be any difference between in-door and out-door workers in this respect. Workers find no fault with the ventilation of shops. Water-closets and wash-rooms are provided for the convenience of workers. There are separate closets for each sex, and they are kept clean. The water is good and there is an ample supply. There appears to be a good means of escape from fire, and the doors of shops are kept unlocked. There may be some children employed under age, but this is hard to find out, as they all say they are over age.

St. Catharines and vicinity: The health of workers has been fair, but those employed in the open air seem to enjoy the best health, as they have a more rugged appearance and do not trouble the doctors so much. Ventilation is good in some factories, and fair in all. There are wash-rooms and water-closets provided, but in most cases both sexes use the same. The water is good and there is plenty of it. I know of no factory in this city with a fire-escape, and escape from some of the shops over stores would be next to impossible if the stairs took fire. As a rule the doors of factories are not locked during working hours. I know of no children under fourteen years of age being employed. Girls from fourteen to eighteen and women are employed in the canning factory, tailor shops, hair-cloth factory, cotton mills, paper mills and printing offices, but the majority are over eighteen years of age. Lack of employment for fathers and brothers is the chief cause of their working. It is only in very rare cases that dissipation of parents is the cause.

St. Thomas: The general condition of the health of workers has been good. As a rule out-door workers have better health than those employed in-doors. There have been several cases of malarial and typhoid fever, the cause being attributed mostly to impure water. Men and women do not work together here except in tailor shops. The water supply was scarce last summer and not of the best quality. The only place employing any boys under fourteen is the flax mill, and that is only at certain seasons. Girls under eighteen years of age work in shops and stores, some to learn a trade and others so as to be able to earn some money for themselves, but there are very few instances of its being caused by the dissipation of parents.

Stratford: The general health of workers is good. Shops are so well ventilated that there is very little difference in the health of in-door and out-door workers. There have been a few cases of diphtheria, but not anything approaching an epidemic. There is no definite cause, some ascribing it to bad water and insufficient sewerage. Water-closets are provided for each sex and wash-rooms where they are required, and they are usually kept clean. Only in the woollen, shoddy and flax mills are girls as young as fourteen years of age found working. The majority of girls are from fourteen to eighteen years old, and take this light work to earn a little for themselves, but in a few cases it may be owing to dissipation in the family.

Toronto: The health of workers, as far as we have been able to ascertain, has been fairly good, with little, if any, perceptible difference between in-door and out-door employments. We do not mean to assert that the health of those who work in factories and shops is as good in all cases as that of those who work in the open air, but it is our opinion that when the workshops and factories are properly ventilated, provided with proper accommodations and an abundant supply of good water, there is, except in special cases, little ground for the popular belief that out-door is so much healthier than in-door employment. Some attention has been paid in nearly all cases to the ventilation of workshops and factories, but further improvement in this respect is in many instances desirable. Wash-rooms and water-closets for each sex are in most instances provided, and would in some cases be greatly improved if a little more attention were paid to cleanliness, and those for the use of females more completely separated from those used by the men. City water is nearly everywhere provided. Though the ordinary factory and workshop would seem to offer adequate means of escape in case of fire, these would be found inadequate, and therefore further means of escape in such an emergency are still desirable. The doors of many factories and shops are closed during working hours. Children under fourteen years of age are not largely employed in the factories or workshops, but many under that age are employed in the large dry goods stores and other establishments in the city. Girls from fourteen to eighteen and women are employed to a considerable extent in some factories, such as the manufacture of rubber, rattan goods, etc., but much more extensively by the wholesale clothing trade and in the manufacture of shirts, corsets, envelopes, paper boxes, etc., and also to a great extent by the large dry goods houses. There may possibly have been a case in which the employment of children and young girls was in some degree owing to the dissipation of the father, but this would be the exception and not the rule. The workingman's view is that so long as we have on the one hand fathers whose earnings are insufficient to provide for the household (and this is much oftener the case than is generally supposed), and who can devise no other plan of supplementing their own earnings, and on the other hand employers who would profit by employing young persons to perform work for which they would otherwise have to pay the wages of adults, we need not ask why they are so employed, and he who attributes their employment to the necessities of a dissipated father offers a gratuitous insult to many deserving but unfortunate men.

Whitby: The health of workers has been good during the year. There were cases of diphtheria in the families of workers, but doctors were puzzled as to the cause. Many workingmen of course suffered from la grippe, losing from five to six days as a rule. Some of the children who are working here and claim to be over age, are very small for their years.

Woodstock: The general condition of the health of the laboring class is good, out-door workers seeming to have a little the advantage. There have been no special diseases among workers as a class. The factories as a general thing are well ventilated, and since the introduction of steam heating into them the operatives have been far more comfortable than before. In all places where women are employed there are wash-rooms and closets separate from the men. All such places are kept reasonably clean. The water supply for domestic purposes is supplied from wells, and the medical men have condemned them in the most densely populated portions of the town as not being wholesome for drinking purposes. All the large factories over two stories in height are supplied with fire-escapes. The factories and shops are all open during working hours. There are a few boys under

fourteen years in the furniture and organ factories to run errands, etc. There are several girls and a number of women employed in the rattan factory, and in sewing the lighter parts of harness in the wholesale harness establishments. I believe they seek that kind of employment to enable them to earn a livelihood, and not as the result of dissipation of husbands or fathers.

4. Running Time of Shops and Factories.—While a few manufacturing centres report a fairly busy year, the accounts from other places are not so encouraging. The agricultural implement works at Chatham were closed down for eight or nine months, and short time was run in other manufacturing concerns in the same town. A large furniture factory at Listowel stopped work for three months on account of business failure. The Grand Trunk shops in London worked short time for about six months, and shut down altogether for some four weeks, although the Globe works in the same city, after being closed for a number of years started again during the year with a few hands. A number of manufacturing establishments in Oshawa were closed down for periods ranging from a few weeks to several months. Some factories in Bowmanville ran three-quarters time, and a Cornwall factory was also run on the same time on account of dulness of trade. The Hamilton collector reports that the "lay off" in the stove trade is becoming longer each year, and as it occurs at a most trying season there is much dissatisfaction expressed by workers in that line. The Canadian Pacific railway shops at Perth ran with a very small staff for four months, while the works of the Michigan Central at St. Thomas ran only eight hours a day during the winter. Owing to an abundance of water in the river the ordinarily dull summer was turned into a more or less busy season at Gananoque, and several industries at Guelph are reported as being fairly busy. The year appears to have been a bad one for those engaged in the building trades, scarcity of employment for out-door workers being reported from several points, more especially Galt, Guelph, Perth and St. Thomas, while the condition of affairs in Toronto was far from satisfactory. Outside of the cities sixty hours per week still appear to be the standard, although in a few cases an hour or so is given the worker on Saturday. The men employed in the G. T. R. workshops at different points generally get a half holiday on Saturday and are paid for the full week, and the Toronto collector reports that the practice of closing industrial concerns at noon on Saturday is increasing. The Wednesday half-holiday for clerks during midsummer is still reported as being generally observed in Hamilton, and is practised at Barrie. At Carleton Place the factories close at 1:30 in summer and 3:30 in winter, but the hands have to put in the extra time during the week, and at several other points the same principle prevails, the workers usually making up at noon-time on five days for their short hours on Saturday.

Aylmer: Factories and mills have been idle more or less during the year from various causes, such as closing down for repairs, change of ownership, lack of orders for goods, etc. In the out-door trades a certain number of men are kept on steadily during the season, while an equal number are never sure one week whether they are to have work the next week or not. The factories are kept open the same number of hours each day. No part of Saturday is given to the worker.

Barrie: It is the rule to close here at five o'clock on Saturday, and full time is allowed.

Berlin, Waterloo, Preston, Hespeler and St. George: All industries have been fairly busy during the year, and have only stopped for repairs, stock-taking, etc., and workers as a rule have been able to find steady employment, particularly so in the shoe, shirt, woollen and cotton mills and cabinet factories. It is the custom to work the same time on Saturday as the rest of the working days. There are a few exceptions to this rule, some stopping at four and others at five o'clock. Sixty hours a week are regarded as the established rule.

Bowmanville: Some of the factories have been working only three-quarters time. It is the custom to keep factories open the same number of hours each day except in summer, when they close on Saturday at 12 m. The men are paid only for the half day

Brantford: Workers generally have found steady employment. Sixty hours make a full week in almost every instance, but on Saturday one hour is given to the men, who are allowed the full day's wages. The Grand Trunk railway workmen leave off work at 11 o'clock a. m. on Saturday and are allowed full time.

Brockville: Two of our factories shut down for about six weeks for repairs. Shops are kept open the same number of hours each day.

Carleton Place: The factories close on Saturday at 1:30 in summer and 3:30 in winter, but the workers put in an extra half hour each day to make up the full week. The shops close at 5 p. m., and the men get paid for the full day.

Chatham: The agricultural implement industry here has been closed down for the last eight or nine months, from what real cause I am not competent to tell, and two of the leading flour mills were closed down a number of weeks last year for want of wheat. Work is hard to find where men have been thrown out of their regular employment. Ten hours a day is the rule except on Saturday, when most frequently half an hour, and in some cases one hour, is given to the worker without reduction of pay. There has been no shortening of hours to any extent. Some establishments have run only three-quarters time in the dull or very cold seasons.

Cobourg: It is the general rule to work ten hours a day, Saturday included, but the woollen factory works ten and a half hours every week-day and seven and a half on Saturday.

Cornwall: The Stormont cotton mill was idle five weeks in the spring, caused by a strike and lock-out. The Canada cotton mill was idle for two weeks in December for repairs, and the Cornwall manufacturing company's mill was working three-quarters time in the weaving department for about two months, on account of bad trade. Out-door workers have in many cases been idle some part of the year by inability to obtain work. The cotton and woollen industries work eleven hours for five days, and five or five and a half on Saturday; the paper mill and wood workers and out-door men work ten hours for six days. In the case of Saturday half-holidays the rest of the time is made up during the other five days, and the employés are paid for sixty hours.

Galt: None of the factories or shops have been closed. There has been a great slackness in the building trades, and some workers have been idle for a time, while a good many had to go to other places to work during the summer. Many laborers also have been idle occasionally. Saturday is shortened from one to two and a half hours, but no part of it is given to the workers. In some cases they make it up during the week, and in others they lose it.

Gananoque: The shops of this place are usually idle for a month or two during low water in the summer, but the water supply has been abundant during the past season and consequently they were very busy. One-half hour is allowed on Saturday.

Guelph: The factories here have been fairly busy this year compared with other years, especially those making organs and pianos, sewing machines and novelties. On the other hand there has not been as much doing for out-door workers as compared with former years, and many of them have had to find temporary employment outside of the city. The rule here is to work ten hours from Monday to Friday and nine on Saturday, for which full pay is given. If otherwise, the employés have to make up the extra time, as, for instance, during three months in summer, when a few of the factories quit work at one o'clock on Saturday, and make up the extra time either at noon or at evening time on the other five days.

Hamilton: There has been no improvement this year over last year in the running time of factories or workshops, except, perhaps, in the cotton factories, which have been running nearly full time for the year. The annual lay-off in the stove trade is becoming longer each year, and causes much dissatisfaction among those engaged in the different branches of this industry, who, as a rule, are laid off in the beginning of the year about two and in some cases three months at a time of the year when the cost of living is the greatest. Very few factories or workshops work on Saturday afternoons,

particularly during the summer months. In some cases the wages are paid, but as a rule the workers lose the time or make it up during the week. In the dry goods, millinery, gents' furnishings, clothing, boot and shoe, as well as in the principal grocery and provision stores, a half holiday on Wednesday afternoon is observed, and nearly all close their stores, giving the clerks the afternoon. This generally covers three months, July, August and September.

Kingston: Industries have not been idle to any extent, although there has been a scarcity of employment. In some cases a half day is allowed on Saturday, but it is made up during the week. There has been a great dearth of employment in the building trade and other branches of out-door work.

Lindsay: The saw and shingle mills close down for about six months of winter. Factories have been closed in winter from being over-stocked. They take advantage of this time to do repairs and take stock. Laborers did not find steady employment this year. Two factories close at five p.m. The employés generally make up their time by working extra hours; otherwise they are not paid for a full day on Saturday.

Listowel: No factories have been idle during the year except that of Hess Bros., which was closed about three months through failure. The same number of hours are worked every day of the week.

London: Most of the factories have closed down for a short time during the year, generally for two weeks, but in two or three cases longer. The reasons given were making repairs and alterations, stock-taking and slackness of trade. The G. T. R. shops which give employment to the largest number of men in the city, after working on short time for about six months, closed down altogether for about four weeks during the year. The cause, as far as the men could find out, was that the half-yearly appropriation was exhausted. The Globe foundry, after being shut up for a number of years, has started a few men to work. I am gad to say that the firm known as Stevens & Burns, iron and brass founders, found it necessary to make quite an increase in their staff of workers. A good many, especially men engaged in the building trades, had no steady employment. Carriage painters lose about three months a year. The brush factory and the shoe factory hands stop work at four o'clock on Saturdays, making fifty-eight hours per week. Bricklayers work nine hours a day for five days and eight hours on Saturday, making fifty-three hours per week. The Grand Trunk men have Saturday afternoons to themselves, except when they are very busy. Most of the other trades work the same number of hours on Saturday that they do on other days, except the furniture factory hands who are allowed to stop work one-half hour sooner on Saturday night and receive a full day's pay. The employés in all other cases have to pay for any time lost, or make it up at some other time during the week.

Oshawa: Some manufacturing establishments have been closed for months and some for weeks, caused by lack of capital in some cases, slackness of trade in others and in one or two instances mismanagement. A number of persons have had to leave town in search of employment. One hour is usually given to the worker on Saturday, and the full day's wages is allowed.

Owen Sound: In nearly every instance workers put in full time on Saturdays, and where the Saturday hours are shorter the men make up the time by taking only half or three-quarters of an hour for dinner.

Perth: Factories and shops cannot be said to run very steadily in this town. The C. P. R. car works here almost suspended work for the first four months of the year, only about twenty hands being kept working on repairs. Employment has been very uncertain, numbers of mechanics and laborers having either to remain idle or seek employment elsewhere. Shops and factories here work the same number of hours each day in the week. Short time is the rule in winter. The year has been unusually dull here, it being impossible for a great number of men to find employment.

Peterborough: Factories and shops, as a rule, run full time, except they may shut down for a week or so to repair the machinery and take stock. Bricklayers, masons and

carpenters only work about seven months in the year, and laborers also lose a good deal of time. It is the custom to work the same number of hours every day. As a rule all go to work ten minutes before one after lunch and quit at five o'clock on Saturday.

Petrolia: The refineries generally run full time all the year around.

St. Catharines and vicinity: Most of the factories close for a time every year to take stock or for want of orders, and must close while the water is being drawn out of the canal every spring. They are closed on an average about two months in each year. Some of the factories are working short time now. Short hours on Saturdays are rare, but one establishment allows the hands two hours off on Saturday and pays in full. Carpenters get off one hour but lose the pay.

St. Thomas: The Michigan Central railway shops last winter worked eight hours per day for four months, but they are now working nine. The factories in the building trade were mostly closed from one to two months last winter on account of no orders. Mechanics and laborers in the building trade have had to work outside of the city, as there has been very little building here. There is no portion of Saturday given to workmen, except by the Grand Trunk railway. The trackmen only work till 4.30 o'clock p.m. instead of six o'clock, and the full wage is allowed.

Stratford: Most of the shops that use machinery have been closed down at some time during the year for the purpose of making necessary repairs to the machinery. In one instance a shop has been closed down and running on short time owing to lack of work. Workers have been pretty steadily employed. The same number of hours are worked each day, except in the Grand Trunk shops where the men have Saturday afternoon, but only get paid for the hours they work.

Toronto: It is usual for factories and workshops to shut down for a time every year for stock-taking, repairs, cleaning up, etc., and the time varies according to circumstances. The belief is common among the men that it takes twice as long to perform these operations in a dull year as it does in a brisk one, and if this opinion be correct the length of time it is taking some establishments this year would justify the inference that business is not very brisk. Most of the factories have been running through the year, though some of them shortened the hours and reduced the number of hands. Many workers employed at the time of our visit said that they found it impossible to get employment for some portion of the year, but it is believed that in-door hands suffered less than out-door hands in this respect, although for a large part of the year there was not sufficient employment for either. Factories are kept open the same number of hours every day except Saturday. The practice of shutting down on noon of that day appears to be increasing, and where this is not done they usually close one hour, and in a few cases two hours earlier. We heard of no cases where the men were paid for time so lost.

Whitby: Factories or shops have not been closed except for necessary repairs. There has not been steady employment for out-door labor. King's tannery allows one hour on Saturday and pays in full. The others lose the time.

Woodstock: The large factories have been running all the year with the exception of the Bain waggon factory, which was idle two months, arising from causes foreign to this enquiry, and having no reference to the state of trade or the condition of the employés. The building trades have to discontinue operations except to a very limited extent during the winter months, and the factories in connection with this trade are generally running on eight-hour time during the winter until operations commence again in the spring. Masons and their laborers are generally idle from the middle of December to the 1st of April. In nearly all the larger factories the general time is ten hours a day or sixty hours per week. The building trades as a general thing quit work one hour earlier on Saturday, but the wages are not allowed for that hour.

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5. Short Hours of Labor.—In Gananoque, Oshawa and Peterborough the hours of daily labor have been shortened, apparently with satisfaction to workers, who appear

to get the benefit of the time saved, but while the hours have also been shortened in Bowmanville, Listowel and Orillia it seems that the worker in most cases loses the time. One large firm in London is reported as having gone back from the nine-hour a day to the ten-hour system. The majority of collectors are in favor of short hours, but the Stratford collector is of opinion that most of the working men of his town are against the hours being shortened for fear the pay will also be lessened. The Toronto collector calls attention to the fact that many of the benefits to be derived from shorter hours would be more clearly shown but for the constant influx of immigrants. Collectors generally regard short hours as conducive to mental, moral and social improvement, and some of the points advanced in favor of the principle are very well taken.

Berlin, Waterloo, Preston, Hespeler and St. George: Sixty hours per week is the prevailing rule in these localities, the only exception being the cigar-makers of Berlin and Waterloo, who work only from forty-eight to fifty hours per week. The building trades here as in other small places work ten hours per day for the six working days.

Bowmanville: Work has been reduced in nearly all our industries to about nine hours per day.

Brantford: The hours of the worker have not been shortened at any trade or calling during the year. It is beyond doubt that to shorten the hours of labor is an advantage to the worker physically, mentally and socially. The class that debauch themselves when on short hours will do it when running full time, as they will do it anyway, but the great majority take advantage of the shorter hours to use them in a proper manner.

Carleton Place: Short hours would be an advantage to those not able to find work, as it would give more men employment and it promotes economy of living. It would also give married men more time at home with their families.

Cornwall: There has not been any reduction in the hours of labor during the year. It is regarded as an advantage to the worker to have less hours of labor and increase the number of days employed during the year. The advantages would be that it would give them more time to attend to such business outside of regular employment as occurs in the life of workers, and it would allow them more time for recreation and social enjoyment. I think it would not tend to idleness or dissipation, but rather the reverse. What time workers have to themselves now is given to looking after comforts of home, attention to various societies and recreation, and I think we may fairly infer that if more time were given it would be spent in the same manner.

Galt: The hours of labor have not been shortened in any trade, and where the Saturday half holiday was in force it has been changed to work to four o'clock. Still the hours of labor are the same per week, the time not being made up.

Gananoque: Carpenters, masons and carriage builders have had their working time shortened about one hour per day. The result is not noticeable, unless it gives employment to more hands. I do not think it makes any appreciable difference in the matter either of economy or dissipation.

Guelph: It is generally regarded as an advantage to the working classes to shorten the hours of labor and increase the number of days employed, or, on the other hand, to give employment to a greater number, for it is quite apparent that the labor market has become over-supplied during late years. Shorter hours of labor also mean an easing of the strain, both mental and physical, caused by the increased speed at which a man has to turn out a given quantity of work now that machinery has so much superseded manual labor. With shorter hours it is claimed that a man has more time to cultivate a plot of ground or improve or repair his home than he had before, even if it is only one hour a day. It likewise tends to give a man more time for study and talking over matters of interest with his friends and family. Long hours are generally associated with degradation of the toiler, as may be seen in the case of some of the European countries, while those countries in which eight and nine

hours prevail as a day's labor produce a more intelligent and advanced type of artisans, and give the lie to the oft repeated but false statement made by interested parties that if the workingmen get short hours we shall have a race of drunkards and idlers, upsetting society, and as a consequence that we shall retrograde as a nation.

Hamilton: No change is reported in the hours of labor. Upon enquiry I find that none of the workers could be induced to return to the longer hour system, even at an advance of wages. I can only reaffirm my last year's report regarding the beneficial effect of shorter hours.

Kingston: The situation remains unchanged in this particular. While shorter hours are said to be an advantage, there has been no concerted action to secure them.

Listowel: The cabinet makers and machine hands at the furniture factory are putting in eight hours per day, while the finishers and packers are working full time or ten hours per day.

London: This year has marked no advance in regard to shortening the hours of labor in this city. On the contrary, one large factory has returned from the nine-hour to the ten-hour a day system. There was a change in the firm, and the new manager insisted on the day hands working ten hours instead of nine, except on Saturday, when they work eight hours. Where shorter time was adopted last year, the result was that some firms had to employ more help, while others had to run steadier in order to get through their season's work, which of course meant fewer idle days for the regular hands. The effect on the conduct has been good. In one establishment, where about 350 men and boys are employed, there is not one-third of the drinking or dissipation. They do not have the excuse now that they are exhausted and need a little whiskey or other stimulant to give them strength to go through their day's work. It is felt by the majority of work-people that it is a decided benefit, as it has a tendency to increase the number of days worked in the year. A man who has steady work, even at smaller wages, is much better off at the end of the year than one who may earn more wages when working but cannot get steady work. The money coming in more regularly can be spent to better advantage. Besides that, a man who has more time morning and evening can live further away from the centre of the city where land and rent is cheaper, which to an industrious man is as good as a rise of pay. It also gives more time for recreation and study, and having more time for thought and discussion the worker has a better chance to become a more intelligent man and more useful citizen.

Orillia: In the carriage factories, foundries, sash and door factories, in fact in nearly all the manufacturing industries, the hours of labor have been shortened by two hours a day. The result has been a loss of twelve hours' pay a week. There is not much dissipation among these workmen.

Oshawa: The time of iron moulders has been reduced to nine hours per day. The results have been good, and we have had few idle moulders during the year. It is regarded as an advantage to shorten the hours of labor. It affords more time for recreation and study, it relieves the labor market, and tends to materially increase wages. The income is more steady and reliable, and so can be used to more advantage than is the case when even the same wages are earned in a less number of days. Instead of engendering dissipated habits, shorter hours are regarded as acting quite the reverse. Being a small town, the leisure time during the summer is largely devoted to working in the gardens, in which much more interest is taken than formerly, and various means of self-improvement are availed of.

Perth: There has been no general demand here for short hours of labor, and where time has been shortened it has been the result of want of orders in factories and shops. The workers here are generally in favor of the eight-hour system, as they think it would tend to give them constant employment and reduce the number of idlers whom they have

indirectly to support. Short hours of labor would not lead the workers of this town into dissipating habits. It is a notorious fact that it is not the working class of the town who are the most dissipated.

Peterborough: The hours of labor have been shortened in two cases. The carpenters are now working nine hours a day, and so are the employés on the corporation work. The effect has been to decrease the number of idle men. According to what is said by those whose time has been decreased it is a decided benefit to them, as they put in the other hour working around home.

St. Catharines and vicinity: Workmen consider it a great advantage to have shorter hours, as it will enable them to work more days or give employment to others who would be unable to get work if long hours were worked. Shorter hours have a tendency to keep the rate of wages firm, as when there are many men looking for work some employers are disposed to reduce the pay of their employés, who dare not resist when there are others to take their place; while if there were less idle men, employers would not be so likely to endeavor to reduce the wages. The men who work the shortest hours are as a rule the best paid in this vicinity, and there is little or no dissipation among them. With shorter hours the tendency is for the workman's habits to become more domestic and literary.

Stratford: The majority of workers are against shortening the hours of labor for fear of the pay also being shortened, but in case eight hours was made a statutory day's work I think it would give employment to workers more days in the year and be an advantage generally. The time gained would be spent by the majority in improving their homes.

Toronto: We know of no case in which the hours of labor have been shortened during the past year. It is claimed by workingmen that shortening the hours of labor has so far been of great benefit to them, and that its action in reducing the number of unemployed would have been more clearly shown had it not been for the constant influx of immigrants. It is the common belief of workingmen that shortening the hours of labor has so far been of great benefit to them, and that it would not in any way tend to promote idle and dissipating habits; that it gives to the married man more time to spend with his family, and to married and single alike greater leisure for mental improvement and a longer rest, which promotes physical improvement; and that though the advantages conferred by the shorter hours of labor might not be used for the best purpose by all (and of what class could this be truly said?), yet the most intelligent, and in fact the majority of workmen would so use them, and the general result would be mental, social and physical improvement. It is believed that so far the advantages afforded them by shorter hours have been utilized by the men in such a way as would encourage a belief in the before-mentioned results.

Woodstock: The factories engaged in the building trade are run on eight hours per day from November 1st to March 1st, and then only a few hands are employed to run out stock for the following season's operations, and the great bulk of the carpenters and masons and masons' laborers are either idle or nearly so during three months of the year. In no other respect have we any workers on short time, so I cannot speak from experience or observation what the result would be by adopting say an eight-hour a day standard. My own opinion is that where there is a surplus of labor it is better to adopt shorter time and give employment to a larger number of men, and thus contribute to the support of a greater number; besides, giving them even partial employment is a means of keeping them to some extent under a sort of discipline which is very salutary in preventing a lapse into dissipation, to which too many are addicted.

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6. Industrial Strikes or Lock-outs.—Several strikes and lock-outs are reported, only a few of which were of a serious nature, but the greater part of the collectors speak of the general relations of employers and workers as being most harmonious. Strikes for an increase in the rate of wages were made in Galt, Owen Sound and in Toronto, while

in St. Catharines and Toronto strikes against a reduction of pay are reported. In Cornwall those engaged in the cotton industry struck against the length of "cuts" compared with the price paid, and in Listowel the men in the furniture factory struck for back wages due them. Surveying the whole field, there appears to be a greater willingness than formerly on the part of both employers and work people to resort to the more conciliatory modes of settling disputes.

Collingwood: There was a riot here between union and non-union sailors on account of the latter working for less wages. The trouble was not settled. Eighteen men were affected by it.

Cornwall: There was a strike and lock-out here this year in the cotton industry. The cause of the trouble was that the weavers came to the conclusion that the cuts were being made longer without more pay for the extra work. It was settled by agreement between the manager and a committee of weavers, the manager signing an agreement to make the cuts a certain length according to the kind of cloth. About 500 workers were affected. They were out five weeks and lost about $1,500.

Galt: There was one strike, that of the moulders. They demanded $2 per day as the minimum wages, and the dispute has not yet been settled. About thirty workers have been concerned. They have been out about six months, and half of them have either left town or have gone into something else. About $6,000 have been lost in earnings.

Listowel: A strike took place here about the 15th of June. The hands of the furniture factory were not paid fully and a demand was made for wages. This with other difficulties caused the firm to make an assignment. The claim of the men was paid through the assignees. One hundred and twenty-two workers were thrown out of employment. Some were idle three months and a half and some left town.

London: There was only one strike during the year, that of the tailors, who had many grievances in regard to prices. Arbitration and entreaty failed to move the employers, and a strike was resorted to. It was of short duration, lasting only two days. The men carried their point. The advantages were considerable, while the loss of wages was very slight.

Owen Sound: One strike occurred here by the rivetters asking for an increase of wages. It was settled by conciliation. About fifty men were engaged and stayed out about three weeks. Over $1,000 was lost in consequence.

Peterborough: The men of the lock works were on a strike, but it only lasted a few days. It was settled amicably by the boss and a committee appointed by the men. There were about twenty men affected by the strike, but the loss resulting did not amount to much.

St. Catharines and vicinity: There was no strike in this city, but one occurred in the Merritton cotton mill against a reduction of wages. It was settled by a compromise between the firm and the hands—halving the difference. The intention was to reduce wages 15 per cent., and both parties agreed to 7½ per cent. reduction. Seventy-five persons were out one week, and the loss in wages was about $500.

Toronto: Four strikes and one lock-out occurred during the year. The bakers, moulders, stone-cutters and plasterers' laborers were out on strike and the lock-out occured in the custom shoe trade. The bakers struck for an increase of $2 per week. The strike lasted two weeks, at the end of which time, not having accomplished the object for which they struck the men resumed work at the old rate. About 200 men were engaged in this strike. The stone-cutters strike, which is still in progress, began October 12th. Only sixteen men struck, and the trouble arose through the employment of a foreman obnoxious to the men. The men on strike have been comfortably provided for, but we have no information as to the amount it has cost. The plasterers' laborers struck for an increase of 2½ cents per hour, and accepted the employers' offer of 1 cent per hour increase. About 200 men were out, and the strike lasted about nine days, at a cost to the men of $358.

The lock-out of custom shoemakers by E. Pack & Son was caused by the refusal of the men to submit to a reduction of 25 cents per pair on boots. Twelve men were locked out, some of whom left the city, some obtained work with other firms, and two or three of the old hands, although the trouble is not yet settled, have resumed work with the firm at the old rate of wages. This lock-out has cost organized labor about $300.

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7. Organised Labor.—Labor does not appear to be organised to the same degree that prevailed a few years ago. A general decadence is reported in the strength of the Knights of Labor. It is doubtful if the order has held its own in any city or town in the province, while in several places the local assemblies have either succumbed or are in a moribund condition. Of all labor organisations, the moulders' union appears to be the most thoroughly organised and effective. A long and bitter strike has been in progress in the moulding trade in Galt, but a Guelph employer is quoted as saying that he would run his shop on union lines in preference to any other way. Some collectors say that organisation has had no apparent influence on the rate of wages, but others assert that combination has tended to keep wages on a sound foundation and prevent reduction. While nearly all labor organisations have benefit features, very few collectors are in a position to give figures. No progress has been made in the matter of female organisation. There are two female labor assemblies in Toronto, but in no other place is a purely female labor organisation reported, although females are to be found in "mixed" assemblies in London and St. Thomas. Many things appear to work against the successful organisation of female labor. A workingmen's political party is reported as organised in Kingston, the object of which is "to secure justice by a more direct representation in our legislative assemblies."

Berlin, Waterloo, Preston, Hespeler and St. George: With a single exception there is not a labor organisation in the places mentioned, the exception being the iron moulders' union of Preston with a membership of about eighty. That organisation, though small in numbers, has been a decided benefit to the trade in Preston and immediate vicinity. A little over one year ago Preston, Hespeler and Waterloo could each boast of one good assembly of the Knights of Labor, numbering in membership 100 or more each, while Berlin had four local assemblies of the same organisation; but I regret to say that owing to the hostility of the employers towards organised labor, the dread of the black list or employers' boycott, and the lack of education, discretion and unity among the members, the order has succumbed, and for the past year has been a dead letter.

Brantford: Labor is not very well organised in this city, the only organisations being the moulders' union and the printers' union, which are in fairly good standing. I am of opinion that organisation tends to keep wages on a sound basis.

Brockville: The moulders' union is the only organisation here, and it is about 32 strong.

Carleton Place: There is one assembly of the K. of L. here, representing machinists, blacksmiths, fitters, carpenters and laborers. There are about 45 members. About $100 were paid to members in sick benefits.

Chatham: At present we have only a carpenters' union, formed about three months ago. The assembly of the K. of L. has practically died out during the past year.

Collingwood: We have but one known organisation, the longshoremen, numbering 35 members, which is maintained by a small fee of twenty cents per month. Their employment is shovelling grain, handling lumber and coal, and all work around the docks. This organisation cares for its sick and impoverished and buries its dead. The effect has been to keep the rate of wages up to a high standard, for while in Owen Sound they work for 15 cents per hour, and for 20 cents per hour at Midland, shovelling grain, Collingwood, which is adjacent, averages 35 cents per hour.

Cornwall: There are two assemblies of K. of L. They represent nearly all the trades in town. Female labor is not organised. The number of any one trade is too small to have much effect on the rate of wages.

Galt: There is an assembly of the K. of L. and a moulders' union in this town.

Gananoque: There was an organisation of K. of L. here, but it does not amount to much at present. I think they keep up their meetings to retain their charter, but interest in the cause has died out.

Guelph: There are a number of labor organisations here, composed as follows: Two K. of L. assemblies, stone cutters and masons' union, bricklayers and plasterers' union, carpenters' union, and moulders' union. Female labor has not an organisation of its own, nor has it to the best of my knowledge a part in any other. I am given to understand that the existing organisations are solid and in good order, but as all of them represent some trade and the proceedings are kept secret from outsiders, it is impossible to give numbers. They seem to be able to hold their own, especially the moulders' union. It is stated by the boss of one of the largest moulding shops in the city, and one that sends work all over the country, that he is satisfied to run his shop on union lines in preference to any other way. Wages have been kept at a fair rate, and no chafing has been occasioned between employer and employés. The moulders' union have taken part with their brother workers in Galt, where a strike has taken place and is still on, and have helped them financially and with their presence on more than one occasion.

Hamilton: Labor is fairly organised in this city, but not so strongly as in the past. There are about twenty-three trades unions and assemblies of the K. of L., exclusive of railroad organisations, with an average membership of about 125. The iron moulders' union is probably the largest in number, having a membership of about 400. The builders' laborers, bricklayers and masons, glass-blowers, printers, shoemakers, shoe-fitters and iron moulders are the only trades that have all or nearly all their craft in membership. Nearly all these organisations are affiliated with an international body. Interest is lagging in the work of labor organisation, and some have ceased to exist, owing to the indifference of members to their own loss, being blind to their own interests. This was exemplified during the year in one or two cases where the organisation went down, the wages immediately following. The amount expended in sick and other benefits is hard to ascertain, as the information is refused in some cases as being contrary to the rules of the order; but nearly all of the organisations have a benevolent fund attached to them.

Kingston: We have a moulders' and a typographical union, and a railroaders' association, of which we cannot give membership, but which has not been changed very much during the past year. The K. of L., once 1,500 strong here, have about ceased to exist. Female labor is not organised. A workingmen's political party was organised in October of 1889, and has a growing membership, whose object it is to secure justice by a more direct representation in our legislative assemblies.

Lindsay: There are two labor organisations in this town.

Listowel: There was an assembly of K. of L. here about two or three years ago, which had a membership of some 175, but it is now broken down.

London: Most of the trades in London are now organised. There are thirteen organisations in all. There are two unions of carpenters, the United Brotherhood and the Amalgamated Society with eighteen members. The Brotherhood is continually gaining strength while the Amalgamated is standing still, if indeed it is not losing ground. We have a branch of the Amalgamated Engineers, a union of International bricklayers and masons of forty-two members. There is also an iron moulders' union, while the machinery moulders are now organising another union under the Brotherhood. The painters and tailors have each an organisation. The typographical union is a pushing and progressive body, which keeps well up with the times. The locomotive engineers and firemen, the brakemen and switchmen all have divisions and unions. The K. of L. have two assemblies, composed of shoemakers, tinsmiths, coppersmiths, tanners, laborers, maltsters, chandlers, blacksmiths' helpers, dressmakers, tailoresses and japanners. In fact, they have a few of every trade in the city, except those who have a trade union of their own. They are in fine working order, and have been steadily gaining ground for some time back. They are now bending their energies to the task of organising the female labor of the city, and the indications are that they will succeed. One assembly (3558)

already has quite a number of female members. There is a trades and labor council composed of delegates from the other bodies. Most of the organisations are averse to publishing the number of their members, but while one or two have decreased slightly during the year the majority have gained ground. Organisation has certainly helped to keep up the standard of wages here. The tailors were engaged in a strike, which only lasted a day or two. They carried their point, which means that apprentices must be regularly bound. They also secured an advance of price in piece-work. There was no money spent in this city on strikes, but the moulders have largely assisted their striking brethren in Galt. The different bodies have extended relief to destitute members, but the amounts are hard to get at.

Oshawa: There are four labor organisations in this town. They comprise nearly all trades, but particularly the iron moulders. Female labor is not organised. The result of organisation has been to prevent reduction in wages, notably so where the trades are thoroughly organised, as in the case of the moulders. About $300 were expended during the year in benevolent purposes. The iron moulders' union has 130 members; L. A. 2355 K. of L., composed of mixed trades and occupations, 160 members; L. A. 4279, Cedar Dale, mixed assembly, 68 members; trades and labor council, 15 members.

Owen Sound: There is not a labor organisation of any kind in this town. There used to be an assembly of the K. of L., but it has been defunct for over a year. It never did anything worth speaking of.

Perth: The only labor organisation here is the K. of L. The membership has fallen off during the year, on account of the members having to go elsewhere for work. It is a mixed assembly of about fifty members. They have paid out about $50 for benevolent purposes. The officers of the assembly have declared their intention to make an effort to increase the membership in the spring. Organisation has not increased wages here, but it has certainly prevented reductions.

Peterborough: Labor is not organised in this place as well as it might be. There are four different organisations here: a mixed assembly of the K. of L. with 45 members; a carpenters' union with about 60 members; a bricklayers and masons' union with 35 members, and a moulders' union with 40 members. There is no female organisation here. Organisation has had no effect on wages.

St. Catharines: The following labor organisations exist in this city: Masons, 36 members; sailors, 100; cigarmakers, 20; barbers, 15; carpenters, 70; builders' laborers, 40; painters, 30; plumbers, 42; printers, 18; L. A. 2056 (K. of L.), 140; ship carpenters, 30; axe-makers, 50; fork-rake makers, 30. The tailors' union has gone up. The members of those trades best organised always receive the highest wages here. Between $700 and $800 were paid out for sick benefits.

St. Thomas: The K. of L. have one assembly here, and there is a bricklayers' union, a carpenters' union, a tailors' union, the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen, and the Brotherhood of Railway Brakemen. The K. of L. represent all classes of labor, but the others represent their own particular trade or occupation. Female labor is organised in the K. of L., but only to a slight extent. There is no separate organisation for women. None of the labor organisations have varied much in membership.

Stratford: There is no regularly organised labor body in this city at present outside of the railway brotherhoods.

Toronto: The K. of L. have 31 assemblies in this city. Two of these are composed entirely of females—one of tailoresses and the other of corset-makers. Another is called a "mixed" assembly, having both male and female members. There are five assemblies of males of various occupations, and the remaining twenty-three are made up of males belonging to the following trades and occupations, each of which has an assembly of its own: Bakers, boiler-makers, bookbinders, brewers' employés, carters, carriage-workers, cabinet-makers, custom shoemakers, journalists, musicians, machinists, miscellaneous iron-workers, shoe and leather-workers, stove-mounters, steam-fitters, tailors, varnishers and

polishers, watch-case makers, rattan workers, 'longshoremen, tinsmiths, trunk-makers, agricultural implement makers. Only a few of these organisations have benevolent features, although all give aid in times of necessity. In addition to the forgoing, there are thirty-six organisations called "unions," three of which belong to the United Brotherhood of Carpenters and Joiners, three more to the Amalgamated Society of Carpenters, two belong to the locomotive engineers, two more to firemen and two to brakemen. The remaining twenty-four are composed of the following trades and occupations: Bricklayers, builders' laborers, cabinet-makers, coopers, cigarmakers, harness-makers, moulders, operative plasterers, plasterers, plasterers' laborers, pressmen, piano-makers, journeymen plumbers, painters, teamsters, typographical union, switchmen, shoemakers, united excavators, stone-cutters, stone-masons, wood-carvers, Toronto orchestral association, and the amalgamated society of machinists, engineers and blacksmiths. Many of these organisations have benevolent features, and though the information necessary to make a more detailed report is unobtainable, it is probable that during the past year a slight reduction has taken place in the aggregate membership of organised labor.

Woodstock: There is a branch of the K. of L. here, but they have very little influence on the condition of the workers of the town, and it is not making any progress, but rather retrograding. There is no organisation of female labor.

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8. Reading-Rooms and Libraries.—Out of some thirty places reporting, Petrolia appears to be the only town in which a reading-room or library of a more or less public character does not exist. In nearly every other place either a Mechanics' Institute or a Y. M. C. A. reading-room is to be found, and in a majority of cases more than one reading-room is reported. Several libraries and reading-rooms under Roman Catholic auspices are also mentioned, and at some of the railway centres the railway men have a reading-room and library of their own. The Free Libraries Act is lauded by two or three collectors as a most beneficent measure, and two places, namely, Chatham and Hamilton, have voted for the plan since last year's report was made. While several collectors state that workers take advantage of the libraries and reading-rooms to a considerable degree, others deplore the lack of patronage bestowed upon these means of mental improvement.

Aylmer: There is only one reading-room and one library in town—the Mechanics Institute. They are poorly patronised by the working classes.

Barrie: The Mechanics' Institute, which is open every evening except Sunday, is well patronised.

Berlin, Preston, Waterloo, Hespeler and St. George: Each of these places has a splendid Mechanics' Institute, established for some years, and most of them have a good reading-room attached. I regret to say that they are not as well patronised by the working classes as they should be, and the value of such an institution as a library would only be acknowledged when it was lost or taken from them.

Bowmanville: A library and reading-room has been established here four years and is fairly patronised.

Brantford: There are three reading-rooms in this city. The Y. M. C. A. reading-room has been organized twenty-one years and has a library in connection. The public library has been organised five years and contains 7,500 volumes. There is a reading-room in connection. The Grand Trunk railway company has a reading-room. The great majority of readers are wage earners.

Brockville: We have one of the finest Mechanics' Institutes in Canada, maintained by government grant and private subscription. It has been organised for several years and is constantly improving. It is open at all times.

Carleton Place: A Mechanics' Institute has been established here for six years and is very well patronised by the working classes.

Chatham: The present Mechanics' Institute is now being wound up to give place to a Public Library, which was voted upon in June last and carried against severe opposition by a small majority.

Cobourg: There is a library and reading-room in this town.

Cornwall: There is one reading-room and the K of L. have a library in connection with their assembly; there are also libraries connected with the various Sunday schools, and one lending library kept by a private individual; but there are no public libraries. The reading-room has been established since the 1st of November and is maintained by the Women's Christian Temperance Union. The room is not patronised as it should be.

Galt: We have a Mechanics' Institute, reading-room and library, established thirty-six years, which is fairly patronised by the working classes.

Gananoque: We have one reading-room, the Y. M. C. A., maintained by voluntary subscriptions. It was organised several years ago. The carriage works circulating library was organised in 1888. Both are open every week-day and evening.

Guelph: The free public library was established directly after the passage of the Free Libraries Act, Guelph being the first place to take advantage of one of the best Acts ever passed by any government. The library is largely patronised by all classes.

Hamilton: The Y. M. C. A. has a reading-room with a library attached, but it is not very well attended, except by members. During the aldermanic elections of last year a by-law was submitted to the ratepayers for the establishment of a free library, under the Libraries Act, which, after having been defeated on two previous occasions, was carried by a good majority, and a handsome new building is about completed on the latest approved plans, and it is expected that it will be open to the public about July 1st, 1890.

Kingston: We have reading-rooms in connection with the Kingston and Pembroke railway, the Y. M. C. A., the Mechanics' Institute, and the Catholic Literary Society.

Lindsay: There are four reading-rooms and three libraries in this town. Three of them have been established four or five years, but one was started within the past year. They are not very well patronised.

Listowel: There was a reading-room in town until about a month ago when, it stopped for want of proper attention. A meeting was held in the town hall on the evening of December 11th, and as the result rooms are to be fitted up and open two nights in the week.

London: There are three reading-rooms and five libraries in this city. The labor organisations have just established a library for the benefit of their members. London is sadly in need of a free library and reading-room, as the fee of $2. is too high.

Orillia: There are two reading-rooms and libraries, the Mechanics' Institute and the Y. M. C. A., and there are libraries in connection with the various Sunday schools and the St. Vincent de Paul (R. C.) society. The reading-rooms are not largely attended by the working classes.

Oshawa: The Mechanics' Institute and reading-room here is well patronised by the working classes.

Owen Sound: The secretary of the Y. M. C. A. here reports that about 30 per cent. of those attending the reading-room of the Association are mechanics or laboring men. There is also a Mechanics' Institute open three days in the week, with a very fair attendance, about 75 per cent. being laboring men.

Perth: The working classes here do not support the Mechanics' Institute as fully as they should do, although it is well conducted. All the schools have libraries attached.

Peterborough: There are two reading-rooms in town, the Mechanics' Institute and the Y. M. C. A. They have been established for years.

Petrolia: There are no public libraries or reading-rooms here at present.

St. Catharines: The public library and reading-room has been in existence three years. The De la Salle has been established four years and is supported by monthly dues of members. Working people are the best patrons of both.

St. Thomas: There are two reading-rooms in this city, that of the free library and the railroad branch of the Y. M. C. A. The first has been established five years and the second fifteen. They are both patronised to a large extent by the working classes.

Stratford: The Grand Trunk shops' reading-room and library are fairly patronised by railway men.

Toronto: In this city there is one central library having five branches, each having a reading-room in connection. The Y. M. C. A. have two reading-rooms, and the Secular society and the Trades and Labor Council have each a library. The public library has been established six years, under the Free Libraries Act. The rooms are fairly patronised by the working classes at all hours. The attendance of workingmen is especially noticable in the mornings, when the unemployed in large numbers resort to the reading-rooms to search the "want" columns of the newspapers, though no statistics are obtainable to show the actual number. It is the opinion of the librarian that the number of working people who patronise the libraries is increasing, and the prevailing opinion among workingmen is that the number would increase far more rapidly were more extensive sitting accommodation provided for readers.

Whitby: There is a library in connection with the Mechanics' Institute. It is not patronised very largely by the working classes.

Woodstock: There are two reading-rooms and libraries in the town. The Mechanics' Institute was established in 1835, contains between 4,000 and 5,000 volumes, and has the leading papers of Canada, the United States and Great Britain on the tables of the reading-room. Technically speaking, the room is not free, but practically it is. These institutions are not patronised by wage-earners to as large a degree as they should be.

Special Subjects.—Under this head a variety of topics are touched upon. It would seem as if the system of granting bonuses and exemption from taxation to manufacturing industries is in much disfavor with working people. In fact, it may be said that the objections of workers are extending very far in the matter of exemptions from municipal taxation. An instance of successful co-operation is noted by the Gananoque collector. The Aylmer collector makes a suggestion well worth considering regarding the holding of labor meetings something after the manner of farmer's institutes, to be addressed by men capable of discussing questions relating to labor and wages from an unbiased standpoint. One collector characterises the piece-work and contract system as ruinous both to the workman and the quality of his work. Collectors who have been at the work for two or more years complain of the increasing desire exhibited by wage-earners, more especially by females, to abstain from furnishing matter for statistics.

Aylmer: I believe that labor meetings, held after the system of farmers' institutes, to be addressed by men able to discuss the labor question from an unbiassed standpoint, would have much to do in preventing strikes and lock-outs such as have been so disastrous in the past. Many persons I have conversed with think that the collection of labor statistics is a move in the right direction. It has been suggested to me that in those trades where work is done by the piece the prices paid for such work should be collected also, as it will be an important factor in settling the eight hour a day movement.

Chatham: The United Business Men's Association has become a thing of the past. It was organised to check the strength and power of the Knights of Labor, and since the latter has ceased to exist as an assembly the usefulness of the association is gone.

Gananoque: The most marked effect of organization upon labor matters was seen in the material and moral support given to a co-operative industry, which was the outcome of a lock-out which happened about two years ago. Some twenty or more of the locked-out workmen, mostly skilled mechanics, finding that they could not go back to work in a manner satisfactory to their ideas of justice, organised a co-operative hame company at Merrickville, some sixty miles distant, and through the aid of the three assemblies here they were enabled to live until they could get returns from their work. They have now a fine factory and are doing a safe and profitable business.

Guelph: It is to be hoped that a Bill will be brought in to make it illegal for any municipality to offer or give a bonus in any shape or form to any manufacturing concern.

Till it is made illegal by act of parliament each municipal council will be tempted to keep up one of the most rotten systems that has been allowed to enter into the industrial life of Canada, to the detriment of all honest manufacturers and the injury of its already over-taxed workingmen.

London: There should be a law against municipal councils granting bonuses or exemptions to manufacturing industries, or indeed any exemptions.

Oshawa: Under this head much could be said in reference to the piece-work and contract system. This system has ruined almost every branch of trade in existence. Two men do the work of three, thereby ruining themselves and the jobs they are making. An agitation was started here less than a year ago on the subject of building associations, but the interest soon died out. Workingmen here do not strive to save. They rely a great deal on life insurance.

Owen Sound: There is a foundry in our town that gives a valuable present to those who serve their apprenticeship without the use of tobacco and intoxicating drinks. There is no doubt that this tends to make sober and industrious men.

St. Catharines: The question of free school-books is engaging the attention of work-people here. They are also opposed to all forms of exemptions, since the exempting of any part of the property of a city or town compels those who are taxed to pay the share of those who are exempt, as is being found out in several places.

Toronto: Your collectors desire to record their opinion that both the male and female workers in small workshops suffer more from lack of accommodation and proper ventilation than the workers in larger establishments; that one or more of the larger stores in the city employ as many or more hands than any save the largest factories; that they certainly employ more children under fourteen and more girls from fourteen to twenty; and in view of the facts above stated your collectors respectfully submit as a subject for future enquiry the propriety of extending the operations of the Factories' Act so as to bring some or all of these establishments under its beneficent influences.

Woodstock: The question of exemption from taxation is one which has lately engaged the attention of the wage-earners of the country, although all are not agreed as to the best method of curing the evil.

WEEKLY STATISTICS OF WORKERS.

Data of Weekly Wages.—The following table gives for a series of years the numbers of persons from whose earnings the averages of weekly wages and hours of labor have been computed for this Report:

Classes of workers.	Employers' returns.				Employés' returns.					
	1889.	1888.	1887.	1886.	1889.	1888.	1887.	1886.	1885.	1884.
Males over 16 years....	13,315	19,393	No collection made.	12,933	3,512	2,554	2,909	2,453	2,384	2,295
Males under 16 years...	866	1,391		861	17	24	37	29	65	56
Females over 16 years..	2,826	3,749		2,494	276	163	322	241	345	264
Females under 16 years.	321	473		224	9	11	10	21	17	22
Total	17,328	25,006		16,512	3,814	2,752	3,278	2,744	2,811	2,637

The number of employés who have supplied information to collectors is larger for 1889 than any other previous year, being 1,062 more than in 1888, and 1,070 more than in

1886. But it consists very largely of males over 16 years of age, the females being only 7 per cent. of the whole. Experience shows, indeed, that it is much more difficult to procure industrial facts from the female than from the male sex, perhaps for the same reason which makes it a hard task to get information from many male workers, viz: the low rate of their earnings. The number of workers for whom statements of weekly wages have been furnished by employers is less than in 1888 by 7,678, but greater than in 1886 by 816. The proportion of the several classes differs but slightly for the several years however, the number of males in each year being about 77 per cent. of the whole and the number of females about 16 per cent.

Localities and Industries Represented.—The total number of industrial establishments represented in weekly wages furnished by employers is 549, whereof 449 have been supplied by two or more industries in eighty towns and villages, as shown in the next table:

Localities.	No.	Localities.	No.	Localities.	No.	Localities.	No.
Alexandria	2	Durham	2	Merritton	5	St. Thomas	7
Almonte	3	Elora	2	Morrisburg	3	Sarnia	8
Aylmer	3	Fergus	2	Mount Forest	4	Simcoe	3
Ayr	2	Galt	6	Norwood	2	Stratford	2
Barrie	4	Gananoque	4	Oakville	2	Tavistock	3
Beaverton	2	Georgetown	7	Orillia	10	Thorold	7
Belleville	4	Glencoe	2	Oshawa	6	Toronto	97
Berlin	9	Glen Williams	2	Ottawa	7	Uxbridge	4
Bowmanville	2	Goderich	3	Owen Sound	3	Walkerton	3
Brampton	2	Grimsby	3	Paris	2	Waterloo	4
Brantford	12	Guelph	11	Penetanguishene	2	Welland	2
Brockville	5	Hamilton	27	Peterborough	7	West Toronto Jcn.	2
Brussels	2	Hespeler	3	Petrolea	9	Whitby	2
Carleton Place	2	Ingersoll	2	Port Dover	2	Wiarton	2
Chatham	6	Kincardine	4	Port Elgin	2	Windsor	3
Chatsworth	2	Kingston	8	Port Hope	7	Wingham	2
Chesley	2	Kinmount	2	Prescott	3	Woodstock	6
Clinton	4	Lindsay	8	Preston	2	Other places (one each)	100
Collingwood	4	Listowel	2	Ridgetown	3		
Cornwall	5	London	14	St. Catharines	7		
Dundas	6	Lyn	2	St. Marys	5	Total	549

In the following places but one industry is represented in the returns of employers:

Acton, Alliston, Alton, Alvinston, Baden, Barton, Blair, Blenheim, Blyth, Bracebridge, Bradford, Bullock's Corners, Burlington, Byng Inlet, Campbellford, Cannington, Carp, Cataract, Chesterville, Clarksburg, Clifford, Cobourg, Colborne, Comber, Conestogo, Courtright, Crown Hill, Davisville, Demorestville, Deseronto, Doon, Dutton, Elginfield, Elmira, Essex, Exeter, Fenelon Falls, Forest, Frankford, Gesto, Gravenhurst, Greensville, Hanover, Hastings, Huntsville, Inglewood, Iroquois, Keewatin, Lakefield, Leamington, Linden, Markdale, Markham, Meaford, Merrickville, Midland, Mitchell, Moorefield, Napanee, Newburgh, New Hamburg, New Lowell, Newmarket, Niagara Falls, North Bay, Norwich, Nottawa, Orangeville, Paisley, Palmerston, Parkhill, Parry Harbor, Plattsville, Pontypool, Port Burwell, Port Perry, Port Stanley, Rodney, St. George, St. Helens, St. Jacob, Shelburne, Singhampton, Southampton, Spanish River, Stayner, Stouffville, Strathroy, Thornbury, Tilbury Centre, Tilsonburg, Trenton, Walkerville, West Flamboro, West Lorne, Whitechurch, Winchester, Winthrop, York.

The number of towns represented in the weekly wages of employés is 39, and embraces the following:

Aylmer, Barrie, Berlin, Bowmanville, Brantford, Brockville, Carleton Place, Chatham, Cobourg, Collingwood, Cornwall, Galt, Gananoque, Guelph, Hamilton, Kingston, Lindsay, Listowel, London, Merritton, Niagara Falls, Orillia, Oshawa, Ottawa, Owen Sound, Perth, Peterborough, Petrolea, Port Dalhousie, Preston, St. Catharines, St. George, St. Thomas, Stratford, Thorold, Toronto, Waterloo, Whitby, Woodstock.

Average Weekly Wages.—In the first of the following tables averages of weekly wages and working time are presented for males over 16 years of age, computed from returns of earnings for one selected week and of earnings for the whole year :

Males over 16.	Full week (Schedule A).				Average week derived from yearly statistics (Schedule B).					
	1889.		1888.		1889.		1888.		1884-9.	
	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.
	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.
With dependents	9 90	60.17	10 32	59.06	9 64	59.55	10 01	58.33	9 70	58.83
Without dependents ...	8 13	59.96	8 32	59.32	7 86	59.28	8 04	58.50	7 68	58.82
Total	9 37	60.11	9 77	59.13	9 14	59.47	9 47	58.38	9 08	58.83

On Schedule A workers were requested to give the amount of their earnings and the number of hours employed for one full week in the year. On Schedule B they were requested to give, in addition to other information, total earnings for the year and average of working time per week when employed, and from these data the second set of average earnings and working hours in the table have been computed. As might be expected, the latter are lower than the former, but being derived from a long period of time, they are doubtless more accurate. The difference, however, is at the outside only 30 cents per week. It will be seen that, as compared with the averages of the six years 1884-9, the weekly earnings of workers with dependents was slightly less in 1889 and the working time longer ; while in the case of workers without dependents, the earnings were greater and the working time also longer. For the average of both classes the earnings in 1889 were in excess of the average of the six years by 6 cents per week, but the working time was longer by nearly two-thirds of an hour.

In the next table the data are given from which have been computed the average weekly wages of workers of both sexes, over and under 16 years of age, for the five years 1884-9—excluding 1887 :

Year.	Returns from employers.	Number of workers.						Amount of wages.	
		Per return.	Total.	Sex.		Age.		Total.	Per worker.
				Male.	Female.	Over 16.	Under 16.		
								$	$ c.
1889.....	549	31.6	17,328	14,181	3,147	16,141	1,187	130,576	7.54
1888.....	756	33.1	25,006	20,784	4,222	23,142	1,864	196,486	7.86
1886.....	378	43.7	16,512	13,794	2,718	15,427	1,085	130,176	7.88
1885.....	482	37.7	18,171	15,183	2,988	16,520	1,651	143,004	7.87
1884.....	406	47.2	19,157	16,273	2,884	17,187	1,970	150,631	7.86

The females are about 20 per cent. of the males for the average of the five years, but their proportionate number shows an almost steady advance each year, growing from nearly 18 per cent. of the males in 1884 to 22 per cent. in 1889, or from 15 per cent. of

the whole number of the workers in the former year to 18 per cent. in the latter. The proportion of workers under 16 years of age, on the other hand, fell from 10 per cent. of the whole in 1884 to a little less than 7 per cent. in 1889. The average rate of wages, however, was more largely influenced by the relative proportion of female workers, and had we no other data it might be assumed that to the increase in this class in 1889 the lower rate of wages was due for that year.

In the next table is presented the averages of weekly wages and hours employed per week of male and female workers over and under 16 years of age, based on the returns received from employés and employers respectively for the years 1885 to 1889, together with averages computed from both sources:

Years.	Males over 16.		Males under 16.		Females over 16.		Females under 16.		All classes.	
	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.
Employés:	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.
1889	9 37	60.11	2 52	60.47	4 67	57.95	2 02	59.33	8 98	59.95
1888	9 77	59.13	3 01	59.17	4 75	57.10	2 85	56.91	9 39	59.00
1887	9 18	58.88	3 11	56.41	4 58	57.21	2 06	55.30	8 63	58.68
1886	9 09	58.07	2 84	58.86	4 29	58.21	2 60	59.67	8 55	58.18
1885	9 00	58.72	2 86	61.43	4 26	59.06	2 79	57.65	8 23	58.82
Average..	9 28	58.98	2 87	59.27	4 51	57.91	2 59	57.77	8 96	58.93
Employers:										
1889	8 65	58.44	2 64	56.78	4 40	56.15	2 34	55.04	7 54	57.92
1888	9 04	59.16	2 83	55.53	4 23	56.46	2.73	56.96	7 86	58.51
1886	8 99	59.00	2 92	55.75	4 38	55.68	2.23	57.51	7 88	58.31
1885	9 13	59.63	2 93	49.84	4 37	58.74	2.50	56.20	7 87	58.78
Average..	8 95	59.06	2 83	54.48	4 34	56.76	2.45	56.40	7 79	58.38
Both sources:										
1889	8 80	58.79	2 64	56.85	4 42	56.31	2 34	55.15	7 80	58.29
1888	9 13	59.15	2 83	55.59	4 25	56.49	2 73	56.96	8 01	58.56
1886	9 00	58.86	2 92	55.85	4 37	55.90	2 26	57.70	7 98	58.28
1885	9 11	59.50	2 93	50.43	4 36	58.77	2 52	56.31	7 92	58.79
Average..	9 01	59.08	2 83	54.68	4 35	56.87	2 46	56.53	7 93	58.48

Here it will be seen as a matter of fact that whereas the rate of wages for females over 16 was $4.37 in 1885, according to the returns of employers, it was $4.40 in 1889, and that the wages of males over 16 was $9.13 in the former year and only $8.65 in the latter. So it follows that the fall in wages between 1885 and 1889 was not wholly due to the greater increase in the percentage of female workers, as might hastily be inferred from the previous table. Calculating wages at the rate per hour employed in the week, it is ascertained that while males over 16 earned 15.3 cents in 1885 and 14.8 cents in 1889, females over 16 earned 7.4 cents per hour in the former and 7.8 cents in the latter year. For all classes of workers, according to the returns of employers, the rate in 1885 was 13.4 cents per hour, and in 1889 it was 13 cents. Even now it is not safe to assume that there has been a decrease in wages for males over 16 years, as in 1889 a larger number of places has been canvassed outside of the industrial centres, and we must expect a reduction in the mass. In the returns from employers there is large decrease in some classes of workers such as railway employés in which the rate of wages is high compared with the average given above, and an increase in the number of apprentices or boy helpers. A comparison in more detail will be necessary.

Weekly Wages by Localities.—In the tables which follow a summary is presented of comparative weekly wages and hours of work per week, by localities. The

first table is computed from returns by employers and employés respectively for male workers over 16 years of age:

Localities.	Males over 16.				Localities.	Males over 16.			
	Employers.		Employés.			Employers.		Employés.	
	Wages.	Hours.	Wages.	Hours.		Wages.	Hours.	Wages.	Hours.
	$ c.	No.	$ c.	No.		$ c.	No.	$ c.	No.
Aylmer	7 13	54.78	8 75	60.63	London	7 92	57.49	8 19	58.76
Barrie	9 13	61.24	8 12	59.33	Orillia	8 32	59.19	10 08	59.70
Berlin	7 50	58.92	8 54	58.87	Oshawa	9 24	57.50	10 74	57.42
Bowmanville	9 89	55.20	9 00	60.00	Ottawa	7 96	59.89	10 21	59.89
Brantford	9 29	56.73	8 01	59.87	Owen Sound	7 95	58.35	9 17	60.48
Brockville	9 09	58.69	10 42	62.38	Perth			9 28	60.33
Carleton Place	7 36	58 96	8 19	64.71	Peterborough	8 29	59.93	9 79	58.14
Chatham	8 92	59.55	10 29	62.49	Petrolea	9 72	59.33	10 90	59.60
Cobourg	8 80	60.00	8 93	59.45	Preston	7 15	60.00	8 27	59.44
Collingwood	5 53	57.55	9 06	61.02	St. Catharines	9 12	59.77	9 42	60.63
Cornwall	7 65	60.18	9 36	61.73	St. George	9 00	72.00	8 93	59.33
Galt	7 46	56 80	9 39	58.92	St. Thomas	9 31	61.01	8 93	64.59
Gananoque	9 57	56.49	9 27	58.93	Stratford	8 14	58.78	9 26	60.44
Guelph	8 30	57.88	10 45	60.28	Toronto	9 57	56.57	10 20	58.42
Hamilton	8 89	56.43	9 75	57.77	Waterloo	7 01	58.63	7 24	62.13
Kingston	8 27	58.01	7 01	61.15	Whitby	7 22	58.93	9 02	59.78
Lindsay	7 60	59.67	8 31	63.16	Woodstock	9 13	58.85	10 26	60.92
Listowel	7 99	60.00	8 07	63.37	Other places (146)	7 86	60.72		

In the thirty-five enumerated places all are represented by returns from employés, and all save one by returns from employers. The averages of earnings and hours of labor, it will be observed, vary for each place as given by employers and employés, and in three-fourths of them earnings and hours of labor are higher as given by employés. The averages of earnings per hour are also higher as computed from the returns of employés, being 15.59 cents against 15.42 cents computed from the returns of employers being $8.90 for 57.72 hours in the places specified. In 146 other places the working time is quoted 3 hours per week longer and the weekly wages $1.04 less. The averages of employers are made up from 3,331 workmen in Toronto, 1,006 in Hamilton, 675 in Ottawa, 602 in Cornwall, 556 in St. Catharines, Thorold and Merritton, 459 in London, 452 in Brantford, 288 in Bowmanville, 248 in Chatham, 225 in Woodstock, 224 in St. Thomas, 216 in Petrolea, and smaller numbers in all other places.

The next table gives the comparative wages of females over 16 years of age, from returns of employers and employés in fifteen towns and cities:

Localities.	Females over 16.				Localities.	Females over 16.			
	Employers.		Employés.			Employers.		Employés.	
	Wages.	Hours.	Wages.	Hours.		Wages.	Hours.	Wages.	Hours.
	$ c.	No.	$ c.	No.		$ c.	No.	$ c.	No.
Aylmer	4 13	60.00	4 30	55.20	Lindsay	4 25	56.48	3 50	51.00
Barrie	5 04	53.00	3 67	60.00	Listowel	3 46	60.00	5 00	61.71
Berlin	4 30	57.17	4 25	57.33	London	3 91	53.48	3 95	56.05
Brantford	4 30	58.26	4 67	55.90	Ottawa	3 16	57.64	3 99	59.89
Brockville	3 54	58.29	5 02	59.23	Peterborough	4 53	58.43	3 96	52.29
Gananoque	4 62	50.67	5 15	54.40	St. Catharines	4 54	58.79	4 34	58.24
Guelph	4 19	53.75	5 00	59.75	Toronto	4 27	53.21	5 25	54.16
Hamilton	4 73	52.64	5 29	59.71	Other places	4 50	58.13	4 84	60.74

Here as in the case of males the averages of earnings and hours of work per week are higher as computed from the returns of employés for a large majority of places; but it is to be remembered in both cases that the returns of employers were much more numerous, and it may also be inferred that they embrace a larger proportion of persons in receipt of small wages.

The third table gives for twenty-one places the comparative wages of male and female workers over 16 years of age, computed from the returns of employés only:

Localities.		Male workers over 16.						Females over 16.	
		With dependents.		Without dependents.		Total.			
		Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.
		$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.
Bowmanville	1889	9 28	60.00	8 19	60.00	9 00	60.00	.....	.....
	1888	10 13	59.08	9 15	60.00	9 87	59.32	.....	.....
Brantford	1889	9 62	60.08	6 92	59.73	8 01	59.87	4 67	55.90
	1888	10 27	59.32	7 03	59.16	8 99	59.26	4 14	50.86
Brockville	1889	11 08	63.08	8 85	60.71	10 42	62.38	5 02	59.23
	1888	11 11	62.56	9 82	63.17	10 66	62.77	.....	.....
Carleton Place	1889	8 84	64.19	6 59	66.07	8 19	64.71	.....	.....
	1888	8 84	60.50	7 84	60.00	8 57	60.37	4 25	60.00
Chatham	1889	10 58	62.47	8 24	62.62	10 29	62.49	5 00	60.00
	1888	10 12	61.48	7 39	61.26	9 65	61.45	4 34	59.13
Cobourg	1889	9 14	59.26	8 10	60.18	8 93	59.45	4 50	60.00
	1888	10 12	58.41	7 15	58.15	9 13	58.32	4 96	58.00
Cornwall	1889	9 28	61.71	9 64	61.80	9 36	61.73	.....	.....
	1888	8 35	61.63	8 71	61.91	8 43	61.69	5 37	60.29
Galt	1889	9 81	58 92	8 13	58.92	9 39	58.92	.....	.....
	1888	10 04	58.75	8 33	58.10	9 33	58 48	.....	.....
Gananoque	1889	10 36	59.45	6 85	57.69	9 27	58.93	5 15	54.40
	1888	10 28	57.80	8 38	57.83	9 74	57.81	5 50	60.00
Guelph	1889	10 83	60.58	8 54	58.78	10 45	60.28	5 00	59.75
	1888	10 22	60.48	7 49	60.49	9 74	60.48	4 21	52.57
Hamilton	1889	9 98	57.84	8 59	57.46	9 75	57.77	5 29	59.71
	1888	10 51	56.32	9 62	57.85	10 31	56.68	.....	.....
Kingston	1889	7 70	60.08	5 97	62.81	7 01	61.15	3 75	65.00
	1888	9 63	59.80	8 03	60.16	9 10	59.92	5 22	58.70
London	1889	8 73	58 90	6 86	58.40	8 19	58.76	3 95	56.05
	1888	9 68	57.94	7 06	58.26	9 18	57.27	5 95	54.00
Oshawa	1889	10 83	57.41	10 42	57.44	10 74	57.42	.....	.....
	1888	11 06	56.84	9 58	60.67	10 85	57.36	.....	.....
Ottawa	1889	10 27	60.15	9 80	58.00	10 21	59.89	3 99	59.89
	1888	13 59	58.94	12 50	56.75	13 38	58.50	.....	.....
Perth	1889	9 55	60.49	8 58	59.91	9 28	60.38	3 77	60.00
	1888	9 98	60.00	9 57	61.50	9 87	60.39	.....	.....
Peterborough	1889	10 12	58.18	9 03	57.88	9 79	58.14	3 96	52.29
	1888	10 10	58.59	7 79	59.48	9 14	58.96	4 38	54.00
St. Catharines	1889	9 78	61.01	7 94	59 06	9 42	60.63	4 34	58.24
	1888	10 93	58.69	9 66	57.27	10 69	58.42	4 25	57.00
St. Thomas	1889	9 20	65.22	7 82	62.00	8 93	64.59	.....	.....
	1888	10 26	62.88	8 09	60.00	9 82	62.30	.....	.....
Stratford	1889	10 26	60.17	7 60	60.89	9 26	60.44	4 80	59.52
	1888	10 35	60.18	7 82	60.46	9 39	60.29	5 68	60.38
Toronto	1889	10 76	58.19	9 23	58.80	10 20	58 42	5 25	54.16
	1888	12 29	55.22	9 30	56.00	11 20	55.51	4 35	54.52

Lower wages and longer hours per week are the rule here also, for males with and without dependents; in sixteen of the twenty-one places in which the comparison is possible for these years the wages are lower in 1889 than in 1888, while in seventeen places the working time is longer. In the female class there is no marked change either way, some places indicating an increase in wages and working hours and others a decrease.

The fourth table presents a comparative statement by cities and towns of weekly wages computed from the combined returns of employers and employés :

Localities.	Males over 16.		Males under 16.		Females over 16.		Females under 16.		All classes.	
	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.
	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.
Aylmer	8 03	58.02	.....	.....	4 15	59.23	.....	.....	7 25	58.26
Barrie	8 37	59.80	2 00	60.00	4 58	55.33	3 00	54 00	8 16	59 59
Berlin	7 71	58.91	1 95	59.09	4 29	57.19	2 50	58.36	6 32	58.50
Bowmanville	9 66	56.38	3 94	55.00	.....	.....	.....	.....	9 54	56.41
Brantford	9 07	57.27	2 09	58.80	4 37	57.81	2 14	58.57	8 42	57.37
Brockville	10 15	61.61	3 06	59.71	4 70	59.03	.....	.....	9 25	61.23
Carleton Place	7 93	62.95	.....	.....	.....	.....	.....	.....	7 93	62.95
Chatham	9 33	60.43	.....	.....	.....	.....	.....	.....	9 32	60.43
Cobourg	8 92	59 50	3 33	60.00	.....	.....	3 00	60.00	7 83	59.61
Collingwood	8 41	60.38	1 25	60.00	4 32	55.25	2 08	51.00	6 84	58.41
Cornwall	7 78	60 30	2 72	59.48	4 93	58.75	2 40	58.32	6 12	59.56
Galt	7 90	57.30	2 38	55.88	3 29	56.32	.....	.....	7 33	57 17
Gananoque	9 54	56.94	2 13	46.00	4 90	52.63	.....	.....	8 67	55.86
Guelph	9 57	59.29	1 98	46.25	4 32	54.75	.....	.....	8 88	58.45
Hamilton	9 04	56.66	2 84	56.82	4 79	53.30	1 77	50.39	8 30	56.20
Kingston	7 67	59 50	1 50	37.40	5 20	56.29	1 75	55.00	6 88	57.31
Lindsay	7 92	61 25	5 00	60.00	4 22	56.23	.....	.....	7 19	60.29
Listowel	8 66	62.72	2 58	60.00	4 36	61.00	.....	.....	7 39	62.40
London	8 03	57.88	2 29	57.10	3 91	53.86	1 97	53.50	6 80	57.07
Orillia	8 69	59.30	2 87	59.00	4 76	49.41	.....	.....	7 95	58.37
Oshawa	9 56	57.49	2 42	59.29	.....	.....	.....	.....	9 32	57 54
Ottawa	9 56	59.89	3 25	58.50	3 76	59.26	2 83	60.00	8 29	59.85
Owen Sound	8 41	59.15	2 25	61.50	2 40	53.60	.....	.....	7 78	58.81
Perth	9 28	60.33	.....	.....	3 77	60.00	.....	.....	9 11	60.32
Peterborough	8 63	59 52	3 25	60.00	4 46	57.62	2 00	54.00	7 84	59.17
Petrolea	9 77	59.34	3 18	53.90	.....	.....	.....	.....	9 49	59.11
Prescott	8 02	59.56	.....	.....	.....	.....	.....	.....	7 85	59.58
St. Catharines	9 20	59.23	2 72	59.53	4 52	58.72	2 03	56.25	8 08	59.11
St. George	8 94	60.60	.....	.....	5 00	60.00	.....	.....	8 58	60.55
St. Thomas	9 23	61.73	2 70	60.00	.....	.....	.....	.....	9 12	61.70
Stratford	9 08	60.17	2 22	57.60	4 80	59.52	.....	.....	8 63	60.08
Toronto	9 64	56 79	2 66	55.46	4 32	53.26	2 31	53.69	8 26	56 05
Waterloo	7 07	59 62	2 06	58.29	2 84	54.00	1 68	51.60	6 50	59.13
Whitby	7 93	59.27	.....	.....	4 00	59.00	.....	.....	7 84	59.26
Woodstock	9 34	59.23	2 95	59.00	.....	.....	.....	.....	9 32	59.23
Other places*	7 86	60.72	2 77	58.16	4 27	58.23	2 50	56.20	6 45	60.35

* From employers only.

Thirty-five places are specified in this table (or thirty-nine more strictly speaking, as Merritton, Niagara Falls, Port Dalhousie and Thorold are included with St. Catharines). Other places not enumerated give statistics computed from returns of employers only. In one place (Brockville) the earnings of males over 16 years exceed $10, in fifteen they range between $9 and $10, in eleven between $8 and $9 and in eight between $7 and $8. For all classes of workers there are eight places in which the range is between $9 and $10, in ten it is between $8 and $9, in eleven it is between $7 and $8 and in six it is between $6 and $7. In nine places the working time per week is over 60 hours, in seventeen it is between 58 and 60, and in only one is it under 56 hours. The returns from employers were not classified by localities previous to 1889. Notwithstanding the large number of returns received, all classes are represented in only thirteen out of the thirty-five places specified. Of these thirteen Brantford quotes the highest wages for all classes and Cornwall the lowest.

Weekly Wages by Occupations.—In the next set of tables is given comparative statistics of weekly wages and hours of labor by the principal occupations. The first presents wages and working time for thirty-three occupations compiled from the

returns of employés and employers separately for 1889 and conjointly for 1888, 1889 and for the six years 1884-9:

Occupations.	Averages from employés.		Averages from employers.		Averages derived from both sources.					
					1889.		1888.		1884-9.	
	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.
	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.
Baker	9 17	66.74	9 15	60.00	9 16	64.55	10 08	59.11	9 25	61.34
Blacksmith	9 51	59.56	10 41	58.51	10 06	58.92	10 46	59.05	9 96	58.74
Blacksmith's helper	6 83	58.80	7 18	58.98	7 08	58.93	7 08	58.09	6 87	56.91
Boilermaker	10 55	56.83	12 09	59.95	11 75	59.27	11 88	59.87	11 28	58.38
Book-keeper	12 23	56.73	11 28	57.45	11 51	57.27	11 43	57.57	11 92	57.71
Bricklayer	14 97	56.40	16 21	51.42	15 24	55.31	16 06	51.77	15 10	55.38
Cabinet-maker	9 19	59.67	9 97	57.35	9 68	58.19	9 39	57.78	9 48	59.11
Carpenter	9 90	58.32	10 63	56.11	10 37	56.88	10 12	57.19	9 98	57.06
Carriage trimmer	10 29	59.53	10 62	56.38	10 51	57.47	10 40	58.30	10 22	57.83
Cigar-maker	7 97	50.98	8 21	47.71	8 14	47.57	8 18	48.78	8 47	50.43
Cooper	8 67	59.00	9 57	58.77	9 25	58.85	9 50	58.64	9 20	58.64
Engineer	8 97	64.85	9 48	61.82	9 35	62.56	9 45	62.49	9 43	62.51
Fireman	7 88	67.73	7 54	62.05	7 58	62.67	7 56	62.73	8 22	62.28
Foreman	14 80	59.14	14 40	59.15	14 46	59.15	14 21	59.62	14 65	59.52
Harness-maker	8 53	59.81	7 48	56.67	8 36	59.30	8 06	59.80	8 60	58.63
Laborer (builder's)	8 56	55.67	9 71	54.88	9 25	55.19	8 72	51.16	8 99	53.18
Laborer (general)	6 95	60.22	7 31	59.34	7 25	59.49	7 20	58.12	7 11	59.07
Machinist	10 17	58.26	10 96	58.15	10 80	58.17	10 44	58.30	10 16	58.56
Marble cutter	10 44	59.60	10 24	58.40	10 40	59.36	11 50	59.10	10 92	58.81
Miller	9 31	62.72	9 80	65.95	9 71	65.35	8 83	65.31	9 81	65.56
Moulder	11 73	58.96	12 84	57.85	12 67	58.01	12 35	57.39	12 10	58.09
Painter	9 45	58.47	9 21	57.50	9 30	57.87	9 49	57.91	9 56	57.73
Plasterer	13 11	55.68	15 50	50.00	13 51	54.73	13 75	49.12	13 76	54.95
Plumber	10 61	56.24	11 81	56.12	10 93	56.21	12 31	53.88	11 44	56.87
Pressman	9 98	57.36	9 26	55.86	9 57	56.51	10 34	54.50	9 63	57.50
Printer	9 24	58.55	9 03	56.10	9 09	56.74	9 05	57.61	9 34	56.79
Salesman	8 30	63.02	9 45	59.22	8 97	60.80	9 32	60.67	9 09	60.33
Stone-cutter	15 38	56.13	18 90	48.53	16 73	53.21	17 85	52.37	15 83	56.53
Stone-mason	14 45	58.87	15 41	49.86	14 61	57.68	16 18	54.31	14 47	56.86
Tailor	10 12	59.57	10 44	57.00	10 28	58.28	9 79	58.09	9 87	58.96
Tanner and currier	8 58	58.89	7 84	59.29	8 01	59.20	7 94	59.44	8 27	59.53
Teamster	7 37	64.65	7 25	60.57	7 27	61.30	7 32	60.61	7 24	60.72
Tinsmith	8 77	59.21	10 81	58.37	9 31	58.98	9 65	59.25	9 37	9.50
Average	9 61	59.25	9 57	58.51	9 58	58.72	.....	.....	.....	.....

Here the best paid occupations in 1889, as shown by both sources of information, were stonecutters, bricklayers and stonemasons. The averages derived from both sources show that there were six occupations in which the wages exceeded $12 per week or $2 per day, viz: stonecutters, bricklayers, foremen, stonemasons, plasterers and moulders; nine in which the wages ranged from $10 to $12, fourteen from $8 to $10, and four under $8, viz: blacksmith's helpers, firemen, general laborers and teamsters. For the average of the six years 1884-9 the same six occupations earned more than $12 per week, six earned

$10 to $12, thirteen earned $8 to $10, and three under $8, viz: blacksmiths' helpers, general laborers and teamsters. As compared with the average of the six years 1884-9 there were four occupations in 1889 against three in which the hours of labor exceeded 62 hours per week, two against three in which it ranged from 60 to 62 hours, fourteen against thirteen in which it ranged from 58 to 60 hours, eight against ten in which it ranged from 56 to 58 hours, and five against four in which it was under 56 hours. Obviously, therefore, the tendency is not towards a shortening of the hours of labor as shown by the weekly returns in a majority of the occupations specified in the foregoing table.

Weekly wages of males over 16 in fifty-eight occupations and of females in five occupations for 1889, 1888 and the average of the six years 1884-9 are exhibited in the following table, derived from the yearly statistics of employés, six days constituting a week:

Occupations.	1889	1888	1884-9	Occupations.	1889	1888	1884-9
Males over 16.	$ c.	$ c.	$ c.	Males over 16—*Con.*	$ c.	$ c.	$ c.
Baker	9 01	9 72	8 81	Moulder	11 45	11 11	11 33
Barber	8 70	9 36	8 22	Packer	7 82	8 57	7 90
Blacksmith	9 45	10 08	9 56	Painter	9 32	9 83	9 48
Blacksmith's helper	6 77	7 38	7 03	Pattern-maker	10 49	10 44	10 75
Boiler-maker	10 43	11 84	10 86	Plasterer	13 42	13 51	13 01
Boiler-maker's helper	6 20	7 07	7 21	Plumber	10 52	11 19	10 66
Book-binder	9 87	10 30	10 69	Porter	6 95	7 15	7 42
Book-keeper	12 29	11 91	11 66	Pressman	9 85	10 10	9 59
Brass-finisher	9 58	.....	9 60	Printer	9 19	9 38	9 38
Brick-layer	14 78	15 52	14 59	Railway employé—			
Cabinet-maker	9 27	9 27	9 08	Car builder	8 88	10 91	8 80
Carpenter	9 81	10 17	9 76	Car repairer	8 80	9 48	8 66
Carriage-trimmer	10 23	9 97	10 33	Salesman	8 25	8 60	8 42
Carver	11 23	9 70	10 85	Shoe-maker	8 51	8 70	8 35
Case-maker	11 04	10 04	10 46	Stone-cutter	15 04	15 58	14 00
Cigar-maker	8 46	9 60	8 40	Stone-mason	14 20	16 25	14 23
Cooper	8 29	8 07	8 33	Stove-mounter	8 96	9 49	9 09
Cotton mill operative	7 47	7 69	7 93	Tailor	9 96	9 70	9 55
Cutter (tailor's)	15 97	15 74	15 94	Tanner and currier	8 56	9 13	8 38
Engineer (stationary)	8 76	8 74	8 88	Teamster	7 36	7 25	7 27
Finisher (wood)	9 88	9 86	8 95	Tinsmith	8 70	8 99	8 80
Fireman	7 39	8 35	7 76	Tobacco-roller	9 82	11 19	10 51
Harness-maker	8 57	8 53	8 45	Upholsterer	9 71	8 75	9 47
Laborer (builder's)	8 70	8 85	.....	Wood-turner	10 46	10 14	9 54
Laborer (general)	6 86	7 20	7 21	Wood-worker	9 50	9 19	9 27
Lumber mill employé	8 55	8 40	9 06	Woollen mill operative	8 54	8 14	7 87
Machine hand	8 33	9 07	8 59				
Machinist	10 15	10 30	10 04	Females over 16.			
Marble-cutter	10 22	10 70	10 19	Cotton mill operative	5 25	5 47	4 94
Marble-polisher	8 33	8 81	8 76	Dress-maker	4 51	4 27	3 95
Melter	9 87	10 01	8 69	Sales-woman	4 67	5 81	4 65
Miller	9 25	10 09	9 77	Tailoress	5 54	4 72	4 73
Mill-wright	9 94	.....	11 87	Woollen mill operative	3 89	4 24	3 75

These rates compare on the whole very closely with the rates of the previous table; but, as the data of them have been furnished by employés only they must necessarily be compared with rates of the same class. In twenty-eight male occupations, the rate is higher in 1889 than for the average of the six years, and in thirty other occupations they are

less. In each of the five female occupations the wages are higher than the average of the six years. The best paid trade appears to be that of tailors' cutter, which is $15.94 per week for the six years; the bricklayers' trade comes next, at $14.59; the stonemasons' third, at $14.23; the stonecutters' fourth, at $14; and the plasterers' fifth, at $13.01. These are the only occupations in which the average rate of wages exceed $2 per day. There are thirteen in which the rate is between $10 and $12, thirty-one between $8 and $10, and eight in which it is under $8.

The next table presents the weekly wages and working hours of five principal occupations by localities for 1882, computed from the returns of employers and employés:

Localities.	Blacksmith.		Carpenter.		Machinist.		Moulder.		Painter.	
	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.
	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.
Aylmer	9 00	60.00	7 50	60.00	.....	.....	.....	.....	9 33	60.00
Barrie	9 64	60 00	7 40	60.00	9 23	58.00	9 83	58.00	8 35	60.00
Belleville	7 50	66.60	9 70	60.00	.....	.....	.....	.....	.....	.....
Berlin	.....	.....	8 75	61.25	10 00	58.90	.....	.....	5 53	55.00
Bowmanville	9 09	58.50	8 63	60.00	8 56	55.00	.....	.....	8 50	60.00
Brampton	9 80	58.00	9 70	58.00	11 10	58.24	12 09	58.00	8 53	58.00
Brantford	11 47	58.67	11 01	58.19	11 56	58.25	14 76	57.58	12 50	58.55
Brockville	9 00	60.00	10 56	60.00	10 25	60.00	12 29	60.00	9 25	60 00
Carleton Place	8 50	59.00	9 15	60 00	10 44	59.33	12 75	60.00	9 27	60.00
Chatham	10 09	59.83	9 75	56.75	10 79	59.20	11 74	59.00	8 89	59.96
Cobourg	9 38	60.00	8 55	59.00	13 50	60.00	12 63	60.00	7 56	59.40
Collingwood	.....	.....	9 50	60.00	.....	.....	.....	.....	11 00	60 00
Cornwall	9 90	60.00	9 47	62.56	11 75	60.56	.....	.....	7 50	60.00
Dundas	.....	.....	9 75	60.00	12 45	59.50	.....	.....	.....	.....
Galt	10 04	55 67	9 62	58.00	9 72	57.78	11 42	57.50	9 38	58.67
Gananoque	11 92	60 00	10 00	60 00	11 14	60.00	12 83	51.67	8 32	55.39
Guelph	9 39	59.78	9 61	57.33	10 39	59.00	11 58	56.82	9 63	59.00
Hamilton	10 91	59.07	11 09	57.18	11 22	55.37	12 09	57.58	9 80	58.64
Kingston	10 00	60.00	8 50	60.00	13 00	60.00	.....	.....	10 00	60.00
Lindsay	8 88	59.67	9 10	56.80	8 86	58.00	10 27	54.50	7 80	57.33
Listowel	.....	.....	10 17	60.00	.....	.....	.....	.....	9 75	60.00
London	9 61	58.29	9 29	55 50	9 61	59 38	11 15	59.65	8 29	56.13
Orillia	9 75	59.44	10 39	56.86	9 83	60.00	.....	.....	8 46	58.33
Oshawa	10 04	58.86	10 00	59.00	9 87	59.00	15 20	53.26	8 79	59.46
Ottawa	9 95	60.00	11 00	59.57	10 50	59.50	11 23	59 57	10 38	60.00
Owen Sound	8 18	47 00	9 67	58.00	10 65	59.00	11 04	59.25	.....	.....
Perth	10 01	60 00	9 57	60.00	10 95	60 00	9 75	60.00	9 25	60.00
Peterborough	9 84	59 55	9 64	55.71	11 00	60.60	11 18	60.10	8 95	58.36
Petrolea	9 91	55 93	9 53	59.50	11 31	58.77	.....	.....	9 56	60.00
Preston	8 25	60.00	8 25	60.00	.....	.....	8 50	60.00	8 38	60.00
St. Catharines	10 79	59.50	12 22	58 24	11 58	59.52	12 00	60.00	9 75	59.50
St. Thomas	11 75	60.00	10 48	59.79	11 60	60.26	9 75	60.00	10 04	59.67
Sarnia	9 19	60.00	.....	.....	10 25	60.00	.....	.....	9 50	60.00
Stratford	10 25	57.60	10 50	60.00	10 15	56.29	9 35	55.00	9 83	58.00
Toronto	10 76	57.45	11 34	51.39	11 45	57.17	14 31	58.11	10 39	55.05
Uxbridge	9 95	58.67	.....	.....	10 05	58.00	7 50	60.00	7 50	60.00
Waterloo	7 88	60.00	.....	.....	.....	.....	7 00	60.00	6 65	58.00
West Toronto Junct'n	9 26	59.25	.....	.....	12 74	57.00	9 96	60.00	8 57	55 86
Whitby	8 40	60.00	8 45	59.67	8 78	60.00	12 43	60.00	12 00	60 00
Woodstock	9 12	59.60	9 84	59.24	9 59	59.67	10 49	59.50	10 65	59.50

For blacksmiths the towns paying the lowest rates of weekly wages are Belleville, Owen Sound and Waterloo, and the three paying highest are Brantford, Gananoque and St. Thomas. St. Catharines, Toronto and Hamilton are quoted highest for carpenters' wages, and Barrie, Aylmer and Preston lowest. Cobourg, Kingston and West Toronto Junction are highest for machinists' wages, and Bowmanville, Whitby and Lindsay lowest. For moulders, Oshawa, Brantford and Toronto rank highest, and Waterloo, Uxbridge and Preston lowest. Brantford stands first in the rate of wages paid to painters, Whitby and Collingwood being next, while Berlin, Waterloo, Cornwall and Uxbridge are lowest. There is a greater disparity in the wages paid to painters in the several localities than in those of any other of the five occupations.

YEARLY STATISTICS OF WORKERS.

YEARLY EARNINGS AND COST OF LIVING.—A variety of interesting results may be worked out from the statistics of employés who make returns of wages earned, time employed, and cost of living for the whole year. In the following table, the statistics of the 3,814 workers who made such returns are presented under a classification of ranges of earnings per full week showing also the days employed in year and wages derived from occupation and extra earnings :

Schedule.	$5 and under	$5 to $6.	$6 to $7.	$7 to $8.	$8 to $9.	$9 to $10.	$10 to $11.	$11 to $12.	$12 to $13.	$13 to $14.	$14 to $15.	Over $15.	Total.
No. in range.....	386	308	240	637	757	392	352	391	56	63	169	123	3,814
Weekly wages...$	3 86	5 95	6 84	7 65	8 91	9 87	10 62	11 93	12 60	13 57	14 96	17 88	898
Days employed....	275	276	278	272	272	275	272	264	272	261	249	236	270.6
Yearly wages... $	176	274	312	344	400	440	470	516	559	583	604	685	395
Average daily rate $	65	99	1 12	1 26	1 47	1 60	1 73	1 95	2 06	2 23	2 42	2 90	1 46
Extra earnings ..$	5 87	14 03	22 18	20 93	16 64	16 88	14 51	12 49	13 52	10 94	8 70	8 54	15 18

The next table shows a classification by ranges in greater detail, under the general heads of workers with dependents, and workers without dependents :

Range of weekly wages.	No. in range.	No. of depend'ts.	Average wages for full week.*	Days employed.	Yearly earnings.				Cost of living.	
					Wages from occupation.	Average daily rate.	Extras of self and dependents.	Total.	Total.	Per week.
Workers with dependents.			$ c.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
$5 and under	28	2.14	4 34	254 00	186 33	0 73	51 57	237 90	266 83	5 12
$5 to $6	137	3.28	5 96	274 36	275 11	1 00	30 07	305 18	318 88	6 12
$6 to $7	154	3.48	6 84	276 12	310 59	1 12	34 02	344 61	345 15	6 62
$7 to $8	448	3.46	7 65	273 17	346 53	1 27	28 00	374 53	365 23	7 00
$8 to $9	544	3.63	8 90	273 07	401 78	1 47	21 78	423 56	398 84	7 65
$9 to $10	311	3 51	9 88	276 65	444 67	1 61	20 71	465 38	429 59	8 24
$10 to $11	291	3.78	10 61	272 30	470 79	1 73	17 29	488 08	445 55	8 54
$11 to $12	324	3.66	11 94	264 68	517 44	1 96	13 68	531 12	474 16	9 09
$12 to $13	49	3.35	12 61	270 49	559 62	2 07	15 45	575 07	504 30	9 67
$13 to $14	57	4.23	13 57	263 26	590 80	2 24	11 74	602 54	529 21	10 15
$14 to $15	88	4.09	14 95	253 57	616 05	2 43	10 06	626 11	510 57	9 79
Over $15	106	3.92	18 04	241 84	705 47	2 92	9 84	715 31	591 82	11 35
Total	2557	3.60	9 82	270 15	432 63	1 60	21 46	454 09	419 52	8 05
Workers without dependents.		m. o								
$5 and under	358	139	3 82	276 97	175 60	0 63	2 29	177 89	168 57	3 23
$5 to $6	171	135	5 95	277 60	272 91	0 98	1 19	274 10	233 89	4 46
$6 to $7	86	75	6 85	282 38	315 47	1 12	98	316 45	252 95	4 85
$7 to $8	189	177	7 67	269 38	337 71	1 25	4 19	341 90	269 17	5 16
$8 to $9	213	213	8 94	270 87	396 56	1 46	3 50	400 06	300 52	5 76
$9 to $10	81	80	9 82	266 75	421 36	1 58	2 20	423 56	312 31	5 99
$10 to $11	61	60	10 67	269 69	465 12	1 72	1 23	466 35	330 00	6 33
$11 to $12	67	66	11 93	262 37	510 37	1 95	6 73	517 10	370 14	7 10
$12 to $13	7	7	12 50	280 86	554 51	1 97		554 51	406 57	7 80
$13 to $14	6	6	13 58	242 00	513 58	2 12	3 33	516 91	383 83	7 36
$14 to $15	21	21	15 00	231 81	551 90	2 38	3 00	554 90	384 68	7 38
Over $15	17	17	16 91	197 82	554 83	2 80	44	555 27	345 68	6 63
Total	1277	996	7 32	271 53	320 79	1 18	2 70	323 49	255 53	4 90

* The averages of this column are computed from t e data of schedule A.

Here under workers with dependents all whose earnings are $7 a week and under are unable to meet the cost of living, even with the extra earnings of themselves and those dependent upon them added. In the case of 28 whose average wages per week was $4.34, and whose average extra earnings for the year were $51.57, the income was less than cost of living by $28.93, and in the case of 154 whose average earnings from occupation were $310.59, the cost of living was $345.15 ; but with the extra earnings with themselves and dependents the deficit was reduced to an average of 54 cents. Of the 137 whose weekly wages from occupation ranged from $5 to $6, and whose extra earnings were $30.07, the deficit for the year was $13.70. It is noticeable that 448 persons whose wages per week ranged from $7 to $8 (the average being $7.65) were able to show a surplus for the year of only $9.30, with extra earnings of $28. Taking the whole number of 2,537 workers with dependents, it will be seen that the average rate of earnings from occupation was $9.82 per week, which with the extra earnings of $21.46 made an aggregate for the 270.15 days employed in the year of $454.09, against which there is $419.52 for cost of living in the year, or $8.05 per week for an average family of 4.60. In the class of 1,277 workers without dependents, 996 of whom were males over 16 years, all were able to live within their income upon the average. It is not to be assumed, however, that every person in the several ranges, whether with or without dependents, had a surplus or a deficit according as he may be classified in a range. Some who were in receipt of the lowest earnings were successful in living within their income, while others in receipt of comparatively large earnings were not able to do so.

In the table which follows is presented the aggregates and averages of yearly statistics, classified by sex in the case of workers with dependents as owners, tenants and boarders, and in the case of workers without dependents as over and under 16 years of age :

Class of workers.	No. of returns.	Time employed.		Yearly earnings.				Cost of living.	Surplus or deficit (-).
		Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total.		
With dependents :		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Males, owners....	842	50,344	229.074	374,567	6,398	12,816	393,781	345,009	48,772
	Av.	59.79	272.06	444 85	7 60	15 22	467 67	409 75	57 92
Males, tenants....	1,634	97,170	440,098	699,947	11,039	23,225	734,211	696,327	37,884
	Av.	59.47	269.34	428 36	6 76	14 21	449 33	426 15	23 18
Males, boarders ..	40	2,319	10,632	17,897	60	80	18,037	16,686	1,351
	Av.	57.98	265.80	447 43	1 50	2 00	450 93	417 17	33 76
Females, tenants..	21	1,229	5,574	5,174	484	346	6,004	6,303	-299
	Av.	58.52	265.43	246 37	23 05	16 48	285 90	300 13	-14 23
Total	2,537	151,062	685,378	1,097,585	17,981	36,467	1,152,033	1,064,325	87,708
	Av.	59.54	270.15	432 63	7 09	14 37	454 09	419 52	34 57
Without dependents :									
Males over 16 ...	996	59,042	270,095	353,876	3,114	.....	356,990	276,364	80,626
	Av.	59.28	271.18	355 30	3 13	.....	358 43	277 48	80 95
Males under 16 ...	17	1,021	5,007	2,107	4	.....	2,111	2,121	-10
	Av.	60.06	294.53	123 94	0 23	.....	124 17	124 76	-0 59
Females over 16 ..	255	14,581	69,127	52,587	306	.....	52,893	46,774	6,119
	Av.	57.18	271.09	206 22	1 20	.....	207 42	183 42	24 00
Females under 16 .	9	534	2,519	1,080	16	.....	1,096	1,051	45
	Av.	59.33	279.89	120 00	1 78	.....	121 78	116 72	5 06
Total	1,277	75,178	346,748	409,650	3,440	.....	413,090	326,310	86,780
	Av.	58.87	271.53	320 79	2 70	...	323 49	255 53	67 96
All classes... 1889	3,814	226,240	1,032,121	1,507,235	21,421	36,467	1,565,123	1,390,635	174,488
	Av.	59.32	270.62	395 18	5 62	9 56	410 36	364 61	45 75
1888	2,752	160,280	743,249	1,125,516	11,444	19,060	1,156,020	1,017,186	138,834
	Av.	58.24	270 07	408 98	4 16	6 93	420 07	369 62	50 45

In the class with dependents males who are owners of the dwellings they occupy number one-third and tenants nearly two-thirds of the whole. The former were employed on the average 2.72 days in the year more than the latter, their wages from occupation was greater by $16.49, their extra earnings greater by 84 cents and the earnings of their dependents greater by $1.01, making their total yearly earnings greater by $18.34. On the other hand their cost of living was less by $16.40, and their surplus was consequently greater by $34.24. The apparent inference is that in thrift and economy the workingmen who are owners of their dwellings surpass those who are tenants; but without accurate data of payments on purchase account, rent, etc., it is hardly possible to state the inference definitely. The returns of a large number of owners show, however, that the charge for instalments, interest and taxes is in excess of the rent paid by tenants in a number of places. Male employés with dependents who board make better wages from occupation than either of the other classes, and their cost of living is almost as high, although, as will afterwards be shown, they have only one-third the number of dependents. Females with dependents, all of whom are tenants, show a deficit for the year averaging $14.23, although the number of days during which they were employed was nearly as many as that of males, and their extra earnings were considerably greater, being $39.53 against $22.82 for male owners and $20.97 for male tenants. Males and females over 16 years of age without dependents—996 of the former and 255 of the latter — were employed the same number of days; but the yearly earnings of males were greater by $151.01 and their cost of living was also greater by $94.06. For all classes of workers with and without dependents average earnings exceeded the cost of living in 1889 by $45.75 and in 1888 by $50.45.

Comparative Earnings and Working Time.—The following table shows for six years the averages of time and wages of workers, first by males over 16 years, and secondly by all classes:

Year.	Total male workers over 16.					All classes of workers.				
	Hours per week.	Days in year.	Wages from occupation.	Average daily rate.	Extra earnings of self.	Hours per week.	Days in year.	Wages from occupation.	Average daily rate.	Extra earnings of self.
	No.	No.	$ c.	$ c.	$ c.	No.	No.	$ c.	$ c.	$ c.
1889	59.47	270.47	411 81	1 52	5 87	59.32	270.62	395 18	1 46	5 62
1888	58.38	269.41	425 12	1 58	4 41	58.24	270.07	408 98	1 51	4 16
1887	58.90	260.93	392 82	1 51	7 47	58.70	263.21	371 87	1 41	6 71
1886	58.21	270.18	403 38	1 49	8 22	58.13	270.41	381 83	1 41	7 72
1885	58.95	269.89	403 18	1 49	7 56	58.85	271.28	372 98	1 37	6 72
1884	59.05	265.14	394 34	1 49	4 76	59.10	265.17	372 29	1 40	4 33
1884 9..	58 83	267.67	405 11	1 51	6 38	58.72	268.46	383 85	1 43	5 88

The hours employed per week by males over 16 has ranged from 58.21 in 1886 to 59.47 in 1889, the average for the six years being 58.83 hours; the days employed in the year has ranged from 265.14 in 1884 to 270.47 in 1889, the yearly average being 267.67; and the wages, including extra earnings, from $399.10 in 1884 to $429.53 in 1888, the average being $411.49. The highest average daily rate of wages, exclusive of extra earnings, was obtained in 1888, when it reached $1.58; the lowest, $1.49, was obtained in 1884 and the two succeeding years; and the average for the six years was $1.51 per day. In the statistics for all classes of workers, the averages are nearly uniform for the six years, the greatest diversity occurring under the head of wages from occupation, which ranged from $371.87 in 1887 to $408.98 in 1888. In 1889 the averages are

very close to the yearly averages of the period, but they are in excess under every head with the exception of extra earnings. The time employed was greater than the yearly average by 2.16 days and the wages from occupation greater by $11.33.

The next table presents the same comparison by localities for the two years 1888 and 1889 :

Localities.	Total male workers over 16.					All classes of workers.				
	Hours per week.	Days in year.	Wages from occupation.	Average daily rate.	Extra earnings of self.	Hours per week.	Days in year.	Wages from occupation.	Average daily rate.	Extra earnings of self.
	No.	No.	$ c.	$ c.	$ c.	No.	No.	$ c.	$ c.	$ c.
Bowmanville ... 1889	56.78	284.89	424 10	1 49	3 18	56.78	284.89	424 10	1 49	3 18
1888	55.19	259.92	409 44	1 58	1 87	55.19	259.92	409 44	1 58	1 87
Brantford 1889	59.46	275.14	368 87	1 34	3 75	59.10	271.61	346 86	1 28	3 33
1888	59.04	269.77	402 59	1 49	1 88	58.31	270.13	389 89	1 44	1 77
Brockville..... 1889	61.95	279.30	466 33	1 67	5 58	61.59	281.39	437 65	1 56	4 85
1888	62.59	285.26	467 61	1 64	2 78	62.59	285 26	467 61	1 64	2 78
Carleton Place ... 1889	64.33	290.46	388 60	1 34	3 29	64.33	290.46	388 60	1 34	3 29
1888	55.83	281.76	407 90	1 45	1 06	55.97	280.77	396 24	1 41	1 00
Chatham 1889	61.91	270.97	445 92	1 65	7 52	61 84	270.54	442 87	1 64	7 45
1888	60.88	254.27	398 00	1 57	17 74	60.77	253.66	388 56	1 53	17 05
Cobourg 1889	59.60	287.42	427 83	1 49	3 28	59.70	290.07	376 30	1 30	2 52
1888	58.27	288.05	442 42	1 54	3 77	58.22	288.04	386 89	1 34	2 99
Cornwall 1889	61.29	263 33	399 93	1 52	6 76	61.29	263.33	399 93	1 52	6 76
1888	61.75	254 84	340 97	1 34	0 86	61.49	256.54	321 55	1 25	0 88
Galt 1889	58.19	257.79	403 67	1 57	7 06	58 19	257.79	403 67	1 57	7 06
1888	58.00	262.75	397 17	1 51	3 96	58.00	262.75	397 17	1 51	3 96
Gananoque 1889	58.02	256.43	396 98	1 55	14 77	57.35	258.13	365 98	1 42	12 04
1888	56.57	266.76	435 39	1 63	19 36	56.50	266.85	409 90	1 54	16 94
Guelph..... 1889	60 34	282 57	483 14	1 71	2 27	60 33	282.33	477 11	1 69	2 21
1888	60 61	277.78	427 73	1 54	2 21	60.39	277.94	420 18	1 51	2 14
Hamilton 1889	57.21	244.58	391 27	1 60	8 04	57.41	248.64	380 07	1 53	7 40
1888	55.60	235.30	401 21	1 71	5 52	55.60	235.30	401 21	1 71	5 52
Kingston..... 1889	61.45	249.21	292 09	1 17	11 02	61 62	247.62	286 97	1 16	13 63
1888	59 55	281.12	423 13	1 51	6 25	59.47	281.39	412 90	1 47	5 91
London 1889	57.31	274.74	367 06	1 34	11 35	57.09	274.93	348 06	1 27	11 36
1888	56.24	272.57	407 93	1 50	0 78	56.23	273.16	405 44	1 48	0 76
Oshawa 1889	57.23	275.07	483 81	1 76	10 58	57.23	275.07	483 81	1 76	10 58
1888	56.93	274.84	487 64	1 77	7 39	56.93	247.84	487 64	1 77	7 39
Ottawa..... 1889	59.68	254.28	428 68	1 68	1 43	59.67	255.07	393 11	1 54	1 24
1888	58.15	241.30	509 21	2 11	2 50	58.15	241.30	509 21	2 11	2 50
Perth 1889	59.55	269.12	394 28	1 52	3 06	59 32	259 77	386 75	1 49	2 96
1888	60.26	259.27	416 20	1 61	0 19	60.26	259.27	416 20	1 61	0 19
Peterborough..... 1889	58.14	274.88	433 55	1 58	2 86	57.44	277.63	401 35	1 45	2 50
1888	58.67	254.64	381 70	1 50	7 17	58.36	257.71	370 44	1 44	6 68
St. Catharines..... 1889	60.64	263 58	406 37	1 54	6 89	60.42	264 72	378 41	1 43	6 61
1888	58.08	255.88	446 14	1 74	3 54	58.06	255.68	439 36	1 72	3 46
St. Thomas 1889	64.27	312.29	440 15	1 41	4 20	64.27	312.29	440 15	1 41	4 20
1888	61.03	284.53	454 97	1 60	9 90	61.03	284.53	454 97	1 60	9 90
Stratford..... 1889	58.47	286 98	422 60	1 47	6 18	58.43	285.56	396 96	1 39	6 18
1888	58.70	286.55	428 68	1 50	3 83	58.47	285.47	398 56	1 40	3 73
Toronto..... 1889	57.66	266.09	426 37	1 64	2 98	57.33	265.26	416 74	1 57	2 71
1888	54.79	267.48	474 72	1 77	0 65	54.67	269.69	421 94	1 56	0 74

Taking all classes of workers, it will be seen that St. Thomas and Carleton Place have the distinction of longest working hours per week in 1889, each being in excess of 64

hours; while Brockville and Cornwall stand highest for 1888, the latter at 61.49 and the former at 62.59 hours. The shortest working time per week in 1889 is put to the credit of Bowmanville, where the time was 56.78 hours; and the shortest in 1888 is recorded for Toronto, where it was 54.67 hours. Of days employed in the year, St. Thomas ranks first, at 312 days for 1889; Cobourg and Carleton Place being second at 290 days. Hamilton and Kingston rank lowest, the former at 248.64 days and the latter at 247.62. There are nine places in which the average number of working days in 1889 exceeded 275, six in which it was between 260 and 275 days, four in which it was between 250 and 260 days, and only two in which it was less than 250 days. In 1888 there were eight with working time exceeding 275 days, five in which it ranged from 250 to 260 days, and two in which it was less than 250 days. The highest rate of daily wages was obtained in Oshawa in both years, and also the highest rate of yearly wages in 1889, Ottawa standing first in 1888. In nine places the yearly wages exceeded $400 in 1889, and in thirteen places they exceeded that figure in the previous year.

Comparative Earnings and Cost of Living.—The series of tables under this head show for two or more years the averages of working time, earnings and cost of living in the province by classes of workers and localities. The first presents statistics of 2,537 workers with dependents:

Workers with dependents.		No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Total cost of living.	Cost per capita.	Surplus or deficit (-).
			No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Males, owners...	1889	3.81	59.79	272.06	444 85	7 60	15 22	467 67	409 75	85 12	57 92
	1888	3.77	58.51	269.11	462 96	6 16	10 31	479 43	416 99	87 42	62 44
Males, tenants...	1889	3.56	59.47	269.34	428 36	6 76	14 21	449 33	426 15	93 48	23 18
	1888	3.59	58.25	267.35	440 16	5 05	10 31	455 52	427 06	93 04	28 46
Males, boarders..	1889	1.54	57.98	265.80	447 43	1 50	2 00	450 93	417 17	164 52	33 76
	1888	1.11	58.67	265.89	418 15	.....	.....	418 15	376 65	178 41	41 50
Total males..	1889	3.61	59.55	270.19	434 19	6 95	14 36	455 50	420 52	91 19	34 98
	1888	3.64	58.33	267.89	447 16	5 37	10 26	462 79	423 67	91 29	39 12
	1884-9	3.58	58.83	266.41	430 72	7 74	12 91	451 37	411 73	89 90	39 64
Females, tenants..	1889	2.10	58 52	265.43	246 37	23 05	16 48	285 90	300 13	100 04	-14 23
	1888	2.00	59.33	265.33	242 83	.....	.....	242 83	280 60	93 33	-37 17
	1884-9	1.96	57.92	272.55	230 08	7 76	8 78	246 62	255 08	86 18	-8 46
Average for all workers with dependents.	1889	3 60	59.54	270.15	432 63	7 09	14 37	454 09	419 52	91 23	34 57
	1888	3.63	58.34	267 89	446 83	5 36	10 25	462 44	423 44	91 36	39 00
	1884-9	3.56	58.82	266.48	428 29	7 72	12 85	448 86	409 75	89 86	39 11

Judged by the amount of savings, the males who are owners of the dwellings they occupy are obviously the most successful. The number of days in which they are employed during the year as well as the amount of their earnings exceed those of males who are tenants or males who are boarders besides which their cost of living is less, although the number of their dependents is greater. The life of a boarder with dependents may have some things to commend it, but the cost per capita is about twice as great as that of workers who are householders. The days employed by male workers of all classes with dependents was nearly four days more in 1889 than the average of six years 1884-9, the total earnings were greater by $4.13, the cost of living greater by $8.79, the cost of living per capita greater by $1.29, and the surplus was less by $4.66. Female workers with dependents, all of whom are tenants, worked a shorter time than the erage of six years by 7.12 days, but their earnings from occupation were greater by

$16.29, and their extra earnings and the earnings of their dependents were also greater by $22.99. Yet the cost of living more than kept pace with income, so that the deficit of $8.46 for the average of the six years became $14.23 in 1889. For all classes of workers, with an average of 3.60 dependents, the average working time in 1889 was 270.15 days as against 266.48 for the six years, the average earnings from all sources $454.09 as against $448.86, the total cost of living $419.52 as against $409.75, the cost of living per capita $91.23 as against $89.86, and the surplus $34.57 as against $39.11. With earnings and cost of living the same as the average of the six years, an increase of less than one-half of one dependent to each worker, or say one dependent to two workers, would suffice to wipe out the surplus—so narrow is the margin of the savings of wage-earners who have to provide for the support of others. And it will be seen that about one-third of the surplus is earned by the dependents themselves.

The next table presents the same comparative statistics for 1,277 workers without dependents:

Workers without dependents.		Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Total earnings.	Cost of clothing.	Cost of board and lodging.	Total cost of living.	Surplus or deficit (-).
		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Males over 16	1889..	59.28	271.18	355 30	3 13	358 43	64 29	162 38	277 48	80 95
	1888..	58.50	273.43	366 40	1 85	368 25	64 11	168 17	280 93	87 32
	1884-9	58.82	270.40	346 20	3 35	349 55	60 71	166 93	267 38	82 17
Males under 16	1889..	60.06	294.53	123 94	0 23	124 17	25 17	95 50	124 76	—0 59
	1888..	59.17	294.04	147 84	1 04	148 88	26 36	108 73	142 92	5 96
	1884-9	59.14	284.11	134 06	0 49	134 55	28 15	102 12	134 07	0 48
Females over 16	1889..	57.18	271.09	206 22	1 20	207 42	53 93	116 14	183 42	24 00
	1888..	55·98	276.05	212 41	0 97	213 38	41 97	116 75	180 04	33 34
	1884-9	57.55	274.81	196 09	1 21	197 30	45 94	119 67	171 48	25 82
Females under 16	1889..	59.33	279.89	120 00	1 78	121 78	18 89	93 57	116 72	5 06
	1888..	56.73	287.91	135 95	.....	135 95	28 50	106 75	139 77	—3 82
	1884-9	58.09	276.53	117 17	0 30	117 47	23 76	95 25	120 54	—3 07
Average for all classes.	1889..	58.87	271.53	320 79	2 70	323 49	61 54	152 33	255 53	67 96
	1888..	58.04	274.64	330 05	1 65	331 70	59 59	158 32	257 38	74 32
	1884-9	58.55	271.71	306 18	2 77	308 95	58 41	158 14	241 91	67 04

The working time in 1889 for all classes in this table is almost the same as the average for the years 1884-9, but the average of total earnings is higher by $14.54. The total cost of living is also higher for 1889 than for the average of six years by $13.62, of which $3.13 was for clothing, although the cost of board and lodging was less by $5.81. The surplus of 1889 for all classes without dependents was in excess of the average of the six years by 92 cents. This, however is wholly due to the savings of females under 16, whose surplus was $5.06 against a deficit of $3.07 for the six years. For each of the other three classes the savings were less in 1889 than the average for the six years. The cost of clothing in 1889 to males over 16 was $3.58 and to females $7.99 more than the yearly average, while to males under 16 it was $2.98 and to females $4.87 less. The cost of board and lodging was less than the yearly average to each class of workers, ranging from $1.68 for females under 16 to $6.62 for males under 16. Nevertheless the total cost of living was in excess of the average by $10.10 for males over 16 years, and by $11.94 for females over 16; it was below the average for males under 16 by $9.33 and for females under 16 by $3.82.

Comparative Earnings and Cost of Living by Localities.—In the tables under this head workers are classified as males who are owners and tenants with dependents, and males and females over 16 years of age without dependents, for the years

1888 and 1889 in twenty-one towns from which returns have been collected in both years The first table gives the statistics of males who are owners of the dwellings they occupy :

Localities.		No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Total cost of living.	Cost per capita.	Surplus or deficit (–).
		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Bowmanville	1889	3.57	57.80	285.93	430 46	7 07	4 13	441 66	351 87	77 05	89 79
	1888	2.86	55.14	267.29	436 07	....	.....	436 07	350 00	90 74	86 07
Brantford	1889	2.41	58.41	267.00	435 12	4 70	22 06	461 88	365 70	107 19	96 18
	1888	3.45	58.95	268.91	512 82	2 04	13 64	528 50	390 20	87 60	138 30
Brockville	1889	3.48	63.28	281.09	521 31	2 39	3 91	527 61	423 65	94 60	103 96
	1888	3.39	63.25	293.36	500 31	1 97	5 50	507 78	400 56	91 18	107 22
Carleton Place	1889	4.29	62.43	306.93	439 63	2 14	21 43	463 20	423 62	80 14	39 58
	1888	4.00	56 21	276.53	373 52	....	8 42	381 94	378 32	75 64	3 62
Chatham	1889	3.34	61.47	267.50	451 81	8 03	8 58	468 42	415 24	95 63	53 18
	1888	3.63	60.63	251.48	425 58	20 22	8 34	454 14	406 84	87 93	47 30
Cobourg	1889	4.00	59.89	285.89	490 36	9 44	26 67	526 47	352 94	70 59	173 53
	1888	3.81	58.33	284.48	484 24	12 38	1 67	498 29	458 76	95 39	39 53
Cornwall	1889	4.27	59.45	258.82	414 99	6 49	24 18	445 66	396 51	75 20	49 15
	1888	3.46	61.46	269.62	337 90	.....	16 92	354 82	341 57	76 56	13 25
Galt	1889	3.53	58.18	257.94	439 07	2 94	4 41	446 42	378 97	83 67	67 45
	1888	3.80	58.10	247.80	417 16	11 00	26 20	454 36	377 86	78 72	76 50
Gananoque	1889	3.45	58.09	246.91	446 36	27 91	13 64	487 91	421 48	94 62	66 43
	1888	2.82	58.64	280.00	543 36	24 55	8 18	576 09	424 45	111 17	151 64
Guelph	1889	4.13	60.05	275.00	495 16	4 86	0 89	500 91	439 68	85 79	61 23
	1888	4.18	60.07	265.42	454 05	1 82	7 82	463 69	431 22	83 22	32 47
Hamilton	1889	4.23	57.02	247.21	425 40	7 05	20 35	452 80	425 84	81 38	26 96
	1888	3.76	55.98	246.80	436 24	4 46	15 61	456 31	435 72	91 61	20 59
Kingston	1889	4.29	63.71	252.57	352 21	10 00	98 14	460 35	471 46	89 20	–11 11
	1888	4.06	59.13	277.88	435 09	9 37	38 75	483 21	397 26	78 47	85 95
London	1889	3.67	56.65	279.89	404 98	12 43	32 57	449 98	413 47	88 60	36 51
	1888	3.76	55.97	275.94	457 88	1 06	14 34	473 28	440 18	92 25	33 10
Oshawa	1889	4.71	57.50	283.79	509 07	27 14	28 57	564 78	459 11	80 35	105 67
	1888	4.73	55.36	288.18	580 82	9 09	47 73	637 64	483 27	84 38	154 37
Ottawa	1889	4.69	59.69	254.76	474 35	2 29	11 59	488 23	413 86	72 73	74 37
	1888	5.40	59.60	246.60	521 00	.....	.....	521 00	497 60	77 75	23 40
Perth	1889	3.84	59.14	253.35	417 84	4 31	14 19	436 34	415 94	85 98	20 40
	1888	3.93	60.00	259.14	438 21	... ..	.....	438 21	410 57	83 30	27 64
Peterborough	1889	4.44	57.33	268.11	478 33	5 56	6 67	490 56	388 67	71 39	101 89
	1888	3.60	58.30	241.00	435 60	8 00	....	443 60	364 62	79 26	78 98
St. Catharines	1889	3.47	61.47	270.35	493 23	3 82	6 06	503 11	446 82	99 95	56 29
	1888	3.89	57.50	254.50	490 93	7 08	6 81	504 82	413 04	84 49	91 78
St. Thomas	1889	3.41	69.50	327.00	474 00	7 27	2 73	484 00	456 37	103 51	27 63
	1888	4.08	64.00	295.67	510 22	10 42	.....	520 64	444 67	87 48	75 97
Stratford	1889	3.46	58.56	293.15	469 44	9 46	20 08	498 98	425 03	95 32	73 95
	1888	3.44	57.97	285.56	491 24	5 24	3 89	500 37	406 70	91 51	93 67
Toronto	1889	3.70	57.02	280.50	531 95	0 23	16 16	548 34	547 80	116 44	0 64
	1888	4.10	54.67	257.48	526 73	2 38	17 62	546 73	505 83	92 28	40 90

The differences in the statistics of the same town for the two years are due in part, no doubt, to the difficulty of procuring returns from the workers of the same occupations in the same relative proportions for successive years; but they are also due in no small measure to inequalities in working time. Brockville and Oshawa are the only places showing a surplus of more than $100 for each of the two years, and Kingston is the only one of the twenty-one places in the table showing a deficit in 1889. These statistics, however, can only possess value when the comparison has been extended over a term of years.

The next table presents the same comparative statistics for tenants with dependents in the same towns and cities :

Localities.		No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Total cost of living.	Cost per capita.	Surplus or deficit (-).
			No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Bowmanville	1889	2.79	55.24	284.57	441 72	1 43	4 95	448 10	383 68	101 35	64 42
	1888	2.67	55.29	258.83	411 77	3 38	7 73	422 88	363 43	99 12	59 45
Brantford	1889	3.62	60 76	285.00	463 86	9 43	10 95	484 24	430 50	93 20	53 74
	1888	3.34	58.75	270.07	432 78	3 30	15 23	451 31	386 47	89 03	64 84
Brockville	1889	3.32	61.70	278.34	481 84	9 45	...	491 29	467 05	108 24	24 24
	1888	3.24	61.71	275.71	465 18	2 27	4 08	471 53	426 72	100 53	44 81
Carleton Place	1889	3.74	64.04	275.35	410 25	5 65	7 39	423 29	441 26	93 11	—17 97
	1888	4.03	55.81	282.74	443 73	0 81	20 61	465 15	474 76	94 34	— 9 61
Chatham	1889	3.27	62.22	271.36	462 98	8 31	5 36	476 65	434 18	101 62	42 47
	1888	3.64	61.05	250.99	408 23	18 37	4 22	430 82	409 19	88 15	21 63
Cobourg	1889	3.94	59.55	288.73	429 39	2 39	6 94	438 72	361 73	73 23	76 99
	1888	3.70	58.33	289.30	496 52	1 36	.....	497 88	443 91	94 51	53 97
Cornwall	1889	3.42	61.92	266 73	400 61	8 11	12 12	420 84	407 51	92 13	13 33
	1888	2 83	61.90	251.97	345 63	1 00	25 70	372 33	387 54	101 10	—15 21
Galt	1889	3.05	57.82	264.64	423 24	11 00	13 64	447 88	394 51	97 52	53 37
	1888	3.44	58.00	277.72	449 28	2 22	10 58	462 08	403 63	90 82	58 45
Gananoque	1889	3.65	58.88	274.59	455 64	14 83	24 88	495 35	439 53	94 58	55 82
	1888	3.51	54.79	261.68	422 29	25 00	14 95	462 24	399 48	88 26	62 76
Guelph	1889	3.65	61.06	287.80	504 09	1 23	3 09	508 41	461 17	99 08	47 24
	1888	3.64	60.86	281.70	444 79	2 96	4 95	452 70	430 84	92 84	21 86
Hamilton	1889	3.67	57.38	244.54	394 03	10 71	13 50	418 24	409 36	87 72	8 88
	1888	3.65	55.19	229.52	400 36	7 47	9 35	417 18	420 20	90 27	— 3 02
Kingston	1889	3.07	59.93	244.90	315 55	19 21	44 93	379 69	410 83	100 97	—31 14
	1888	3.37	59.48	280.67	446 16	7 71	29 07	482 94	393 44	90 03	89 50
London	1889	3.97	57.54	271.69	385 37	15 27	30 73	431 37	420 56	84 68	10 81
	1888	3.75	55.78	268.57	411 54	0 94	23 81	436 29	442 97	93 22	— 6 68
Oshawa	1889	4.00	57.58	273.79	482 95	3 95	6 31	493 21	442 92	88 58	50 29
	1888	4 19	57.00	271 26	464 47	8 33	.....	472 80	431 72	83 26	41 08
Ottawa	1889	4.42	59.97	255 82	425 20	1 12	14 50	440 82	417 45	77 01	23 37
	1888	4.91	58.36	228.00	497 16	3 64	4 54	505 34	482 66	81 68	22 68
Perth	1889	3 63	60.08	270.47	404 83	2 49	17 86	425 18	397 47	85 89	27 71
	1888	3.56	60.00	262.44	419 63	0 37	2 50	422 50	419 31	91 90	3 19
Peterborough	1889	4.33	58.53	281.50	446 67	3 67	5 16	455 50	422 73	79 26	32 77
	1888	4.00	57.90	238.29	389 17	14 95	14 43	418 55	419 75	83 95	— 1 20
St. Catharines	1889	3.20	61.08	263.34	401 19	9 20	14 45	424 84	400 64	95 39	24 20
	1888	3.79	58.61	255.09	441 42	3 03	4 52	448 97	415 03	86 67	33 94
St. Thomas	1889	3.96	60.35	306 26	437 13	3 26	0 52	440 91	421 82	85 11	19 09
	1888	3.42	59.00	276.25	434 73	14 33	2 50	451 56	437 65	99 09	13 91
Stratford	1889	3.29	58.15	288.92	475 58	4 22	11 42	491 22	431 57	100 51	59 65
	1888	3.40	60.00	287.22	457 67	4 18	2 09	463 94	412 62	93 71	51 32
Toronto	1889	3.17	57 64	262.60	446 52	4 87	23 17	474 56	493 46	118 20	—18 90
	1888	3.86	54.26	270.65	518 59	0 48	7 43	526 50	502 60	104 07	23 90

Here the inequalities of time, earnings and cost of living are less observable than in the table of workingmen who are owners, and there is consequently less variation in the average savings. In no case does the surplus reach $100, the highest in 1889 being in Cobourg, where it was $76.99. Three places show a deficit, viz.: Carleton Place, Kingston and Toronto, as against four places in 1888. In six places, viz.: Bowmanville, Brockville, Chatham, Kingston, Stratford and Toronto the cost of living per capita exceeded $100 in 1889, Toronto being highest. The lowest cost of living per capita in 1888 was obtained in Ottawa, where it was $81.68, and the lowest in 1889 in Cobourg, where it was $73.23.

Similar comparisons for all classes of workers with dependents are made in the following table, being complete as regards fourteen places for the four years 1886-9 :

Localities.		No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Total cost of living.	Cost per capita.	Surplus or deficit (-).
			No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Bowmanville	1889	3.07	56 84	285.14	437 73	3 68	4 48	445 89	371 59	91 35	74 30
	1888	2.69	55.23	261.44	419 27	2 08	4 75	426 10	358 52	97 10	67 58
Brantford	1889	3.08	59.71	276.95	451 00	7 32	15 92	474 24	401 51	98 44	72 73
	1888	3.38	58 82	269.68	459 46	2 88	14 70	477 01	387 71	88 54	89 53
Brockville	1889	3.33	62.45	280.44	495 08	6 50	1 47	503 11	448 98	103 74	54 13
	1888	3.30	62.27	282.13	477 96	2 15	4 60	484 71	417 21	97 05	67 50
	1886-9	3.63	60.91	273.40	457 23	10 08	3 86	471 17	414 51	89 53	56 66
Carleton Place	1889	3.95	63.43	287.30	421 37	4 32	12 70	438 39	434 58	87 87	3 81
	1888	3.90	55.98	281.15	420 46	0 48	15 37	436 31	438 80	89 48	−2 49
Chatham	1889	3.30	61.91	269.78	458 42	8 19	6 68	473 29	426 44	99 15	46 85
	1888	3.62	65.93	250 88	414 45	19 02	5 89	439 36	407 55	88 22	81 81
	1886-9	3.57	61.10	261.85	433 95	15 16	9 41	458 52	408 85	89 46	49 67
Cobourg	1889	3.88	59.63	288.40	437 47	3 81	10 84	452 12	356 08	72 91	96 04
	1888	3.74	58.33	287.43	491 74	5 65	0 65	498 04	449 69	94 86	48 35
Cornwall	1889	3.63	61.16	265.34	405 74	7 43	15 29	428 46	404 85	87 41	23 61
	1888	2.98	61.71	257.35	339 72	0 67	22 02	362 41	369 83	92 97	−7 42
Galt	1889	3.26	57.97	261.72	430 14	7 49	9 61	447 24	387 73	91 09	59 51
	1888	3.57	58.04	267.04	437 81	5 55	16 17	459 53	394 43	86 28	64 90
	1886-9	3.49	58.52	265.42	435 77	5 52	15 80	457 09	390 66	89 61	57 43
Gananoque	1889	3.39	58.68	263 52	455 42	18 03	18 48	491 93	427 94	97 55	63 99
	1888	3 27	56.20	268.40	466 68	24 83	12 47	503 98	468 63	95 77	95 85
	1886-9	3.43	58 31	266.27	452 53	18 14	12 47	483 14	412 38	93 09	70 76
Guelph	1889	3.85	60.65	282.57	500 44	2 71	2 19	505 34	452 58	93 34	52 96
	1888	3.77	60.67	277.67	447 68	2 68	5 66	455 42	430 93	90 25	24 49
	1886-9	3 99	58.44	278.46	446 12	3 83	7 20	457 15	420 53	84 27	36 62
Hamilton	1889	3.73	57.33	245.59	401 70	9 27	14 50	425 47	411 79	87 01	13 68
	1888	3.68	55 40	231.12	409 91	6 66	11 02	427 59	424 33	90 63	3 26
	1886-9	3.78	56.32	232.89	405 04	8 59	15 83	429 46	420 57	87 99	8 89
Kingston	1889	3.07	60 80	241.07	313 19	20 17	48 54	381 90	410 27	100 73	-28 37
	1888	3.47	59.43	280.28	444 63	7 94	30 41	482 98	393 97	88 22	89 01
	1886-9	3.52	59.63	270.20	406 47	12 93	27 61	447 01	406 79	90 00	40 22
London	1889	3.78	57.14	274.31	386 79	14 77	30 37	431 93	412 83	86 30	19 10
	1888	3.70	55 93	271.04	427 86	0 96	20 08	448 90	440 42	93 72	8 48
	1886-9	3.71	56.25	270.37	402 10	8 31	20 44	430 85	419 16	88 99	11 69
Oshawa	1889	4 21	57.18	276.97	490 18	13 38	15 29	518 85	446 25	85 72	72 60
	1888	4.84	56 53	276.16	498 15	8 55	13 82	520 52	446 64	83 61	73 88
	1886-9	3.97	57.35	265.29	460 86	11 38	9 65	481 89	430 41	86 60	51 48
Ottawa	1889	4.47	59.91	255 61	434 67	1 34	13 94	449 95	416 76	76 16	33 19
	1888	5.06	58.75	233.81	504 61	2 50	3 12	510 23	487 33	80 38	22 90
	1886-9	4.51	60.73	254.54	452 19	3 94	11 00	467 13	436 15	79 16	30 98
Perth	1889	3.72	59 68	263.27	410 30	3 26	16 32	429 88	405 24	85 93	24 64
	1888	3.67	60.00	261 43	425 28	0 26	1 74	427 28	416 65	89 14	10 63
Peterborough	1889	4.36	58.26	278.41	453 98	4 10	5 51	463 59	414 87	77 42	48 72
	1888	3.78	58 00	240 44	403 02	12 31	9 47	424 80	400 03	83 67	24 77
	1886-9	3.78	58.67	265.07	437 10	12 15	12 63	461 88	417 35	87 31	44 53
St. Catharines	1889	3.21	61 08	265 89	420 35	8 31	13 04	441 71	410 14	97 41	31 57
	1888	3 82	58.29	254.92	455 57	4 19	5 17	464 93	414 46	86 03	50 47
	1886-9	3.58	60.35	258.95	413 42	6 90	11 52	431 84	406 78	88 82	25 06
St. Thomas	1889	3.69	64.82	316.40	455 16	5 22	1 60	461 98	438 71	93 56	23 27
	1888	3.75	61.50	285 96	472 47	12 38	1 25	486 10	441 16	92 87	44 94
Stratford	1889	3.30	58 25	289.49	470 05	6 27	15 03	491 35	427 21	99 28	64 14
	1888	3.42	59.02	286.42	473 94	4 69	2 96	481 59	409 75	92 64	71 84
	1886-9	3.38	59.63	291.39	472 86	8 28	9 36	490 50	417 50	95 32	73 00
Toronto	1889	3.16	7.46	265.74	459 81	3 88	21 13	484 82	499 05	119 88	-14 23
	1888	3.88	4.33	268.89	517 67	0 73	8 74	527 14	501 52	102 78	25 62
	1886-9	3.36	55.38	263.48	474 29	4 04	14 87	493 20	480 22	110 14	12 98

The most valuable comparisons in this table will be found by taking the averages in the several places for the four years 1886-9. The number of dependents ranges from 3.36 in Toronto to 4.51 in Ottawa, the number of days of working time from 232.89 in Hamilton to 291.39 in Stratford, the total earnings (including extra wages of the worker and earnings of dependents) from $429.46 in Hamilton to $493.20 in Toronto, the total cost of living from $399.66 in Galt to $480.22 in Toronto, the cost of living per capita from $79.16 in Ottawa to $110.14 in Toronto, and the surplus of earnings over cost of living from $8.89 in Hamilton to $73 in Stratford. The latter place, which is one of the lowest in number of dependents and highest in working time, stands next to Toronto in the average of total earnings, being only $2.70 less. It stands next to Toronto also in the cost of living per capita, but at an interval of $14.82.

A comparison of males over 16 without dependents in twenty-one towns and cities is exhibited in the next table for the years 1888 and 1889 :

Localities.		Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Total earnings.	Cost of clothing.	Cost of board and lodging.	Total cost of living.	Surplus.
		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Bowmanville	1889	58.04	284.19	385 32	1 77	387 09	82 88	146 81	270 08	117 01
	1888	55.07	255.71	382 07	1 29	383 36	71 92	150 86	276 93	106 43
Brantford	1889	59.29	273.91	313 13	1 34	314 47	58 49	150 43	223 85	90 62
	1888	58.74	269.91	315 30	0 35	315 65	66 74	158 30	231 16	84 49
Brockville	1889	60.71	276.98	394 31	3 14	397 45	92 06	164 35	301 98	95 47
	1888	63.16	291.00	448 63	3 93	452 56	88 15	189 95	319 36	133 20
Carleton Place	1889	66.53	298.27	307 80	0 73	308 53	61 38	155 33	268 17	40 36
	1888	55.42	283.42	373 55	2 63	376 18	55 26	167 79	314 80	61 38
Chatham	1889	62.62	279.46	356 46	2 69	359 15	65 00	156 00	267 08	92 07
	1888	60.68	270.29	319 12	11 62	330 74	58 75	153 00	247 56	83 18
Cobourg	1889	59.55	284.73	371 71	0 91	372 62	31 18	158 77	225 00	147 62
	1888	58.15	289.30	343 78	.....	343 78	96 30	128 00	284 41	59 37
Cornwall	1889	61.80	255.70	377 88	4 20	382 08	63 00	173 30	298 18	83 90
	1888	61.91	243.73	346 08	2 27	348 35	78 63	171 00	312 65	35 70
Galt	1889	58.85	246.00	324 25	5 77	330 02	45 20	143 33	233 28	96 74
	1888	57.95	256.75	340 27	2 00	342 27	44 17	159 25	252 67	89 60
Gananoque	1889	56.46	239.54	257 63	7 00	264 63	44 08	131 46	209 46	55 17
	1888	57.50	262.67	357 15	5 67	362 82	64 17	143 17	259 88	102 94
Guelph	1889	58.78	282.59	395 37	.. ...	395 37	53 48	162 25	265 78	129 59
	1888	60.32	278.32	336 34	.....	336 34	50 06	155 17	248 60	87 74
Hamilton	1889	56.90	244.41	341 73	1 99	343 72	67 31	160 89	282 67	61 05
	1888	56.26	239.22	372 07	1 70	373 77	58 86	183 19	317 70	56 07
Kingston	1889	62.81	261.46	252 15	3 85	256 00	50 08	142 52	211 66	44 34
	1888	59.79	284.58	379 02	2 80	381 82	66 73	166 30	272 23	109 59
London	1889	57.54	274.39	303 94	4 41	308 35	58 41	152 46	251 63	56 72
	1888	57.77	279.05	323 11	.....	323 11	59 57	153 16	239 57	83 54
Oshawa	1889	57.44	267.89	459 78	.....	459 78	75 00	186 33	331 89	127 89
	1888	59.50	266.50	421 08	.....	421 08	78 33	166 67	313 98	107 10
Ottawa	1889	57.97	244.60	380 23	2 07	382 30	64 57	190 17	296 42	85 88
	1888	55.75	271.25	527 63	2 50	530 13	42 83	215 50	345 00	185 13
Perth	1889	59.18	251.73	351 89	2 55	354 44	50 69	152 64	263 00	91 44
	1888	61.00	253.06	390 06	.....	390 06	65 06	152 69	274 56	115 50
Peterborough	1889	57.88	266.76	386 65	.....	386 65	70 59	153 47	273 71	112 94
	1888	59.48	274.39	352 04	.. ...	352 04	72 00	151 91	249 02	103 02
St. Catharines	1889	59.06	255.81	328 53	2 00	330 53	66 89	166 32	295 72	34 81
	1888	57.20	259.93	406 54	0 83	407 37	54 90	200 47	306 63	100 74
St. Thomas	1889	62.00	295.45	378 75	.....	378 75	55 50	180 55	291 09	87 66
	1888	59.17	278.83	384 97	. ...	384 97	40 00	143 33	253 61	131 36
Stratford	1889	58.83	281.81	338 52	6 51	345 03	69 22	160 88	295 19	49 84
	1888	58 18	286.76	355 13	2 44	357 57	66 29	157 85	293 29	64 28
Toronto	1889	57.91	265.88	391 47	1 35	392 82	71 16	184 07	331 95	60 87
	1888	55.58	265.01	387 10	0 52	387 62	56 44	199 86	313 26	74 36

Here again the data are insufficient for useful comparisons, and the same observations will apply generally as in the case of the averages of other classes of employés for a two years period. Oshawa gives the highest rate of earnings for 1889 and Ottawa for 1888, both being in excess of $450. Kingston is lowest in the former year ($256) and Brantford in the latter ($315.65) The cost of clothing ranges in 1889 from $31.18 in Cobourg to $92 06 in Brockville, and in 1888 from $40 in St. Thomas to $96.30 in Cobourg. In the case of the latter town the comparison of the two years passes into a contrast. Cost of board and lodging ranges from $131.46 in Gananoque to $190.17 in Ottawa in 1889, and from $128 in Cobourg to $215.50 in Ottawa in 1888. For total cost of living Toronto stands highest in 1889, with Oshawa a close second; in 1888 Ottawa is highest and Brantford lowest, their difference being $113.84. In five places the surplus exceeded $100 in 1889, Cobourg being first at $147.62, and in ten places it exceeded $100 in 1888, Ottawa having the lead at $185.13. The lowest surplus of the two years is recorded for St. Catharines, where it was only $34.81; but there are only five places in which it fell below an average of $50 in either of the two years.

The next table gives for nine places the averages for females over 16 years of age without dependents for the two years.

Localities.		Hours per week	Days in year.	Wages from occupation.	Extras of self.	Total earnings.	Cost of clothing.	Cost of board and lodging.	Total cost of living.	Surplus.
		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Brantford	1889	55.80	242.80	184 25	.....	184 25	69 00	99 50	165 63	18 72
	1888	50.36	275.71	192 14	.....	192 14	35 00	102 29	162 14	30 00
Cobourg	1889	60 00	298.64	224 20	.....	224 20	34 55	123 55	174 73	49 47
	1888	58.00	288.00	240 00	.....	240 00	.....	.....	200 00	40 00
Gananoque	1889	54.40	265.60	229 55	.....	229 55	49 44	80 20	143 80	85 75
	1888	55.20	280.20	257 40	...	257 40	33 00	101 00	139 20	118 20
Guelph	1889	59.75	272.50	230 00	.....	230 00	45 00	118 75	183 00	47 00
	1888	52.57	279.29	188 29	.....	188 29	35 71	97 14	143 14	45 15
London	1889	54.44	276.78	177 89	5 92	183 81	40 61	101 83	160 61	23 80
	1888	54.00	300.00	293 00	.....	293 00	53 00	134 00	222 00	71 00
Peterborough	1889	52 29	296 43	186 36	... .	186 36	56 42	98 57	170 71	15 65
	1888	54 00	300.00	215 63	. ...	215 63	73 75	93 50	173 50	42 13
St. Catharines	1889	56.77	265 00	187 69	2 31	190 00	46 26	122 95	185 23	4 77
	1888	57.00	247.75	174 88	.....	174 88	38 75	120 75	169 13	5 75
Stratford	1889	58.45	273.07	212 90	5 51	218 41	48 75	133 94	194 79	23 62
	1888	56.19	271.77	239 63	3 08	242 71	40 00	118 00	203 63	39 08
Toronto	1889	54.03	259 35	216 71	.....	216 71	67 31	126 36	214 28	2 43
	1888	54.08	278.90	201 49	1 22	202 71	42 21	135 77	192 29	10 42

The highest wages in the two years is credited to London and the lowest to St. Catharines, the highest cost of clothing to Brantford and the lowest to Gananoque, the highest cost of board and lodging to Toronto and the lowest to Gananoque, the highest total cost of living to London, the lowest to Gananoque. But Gananoque makes the best record for savings of female wage-earners, their average surplus being greater than that of any other place in both years, while Toronto's average is lowest in 1889 and that of St. Catharines in 1888.

Comparative Earnings and Cost of Living in Localities by Occupations.—The next series of tables compares earnings and cost of living of workers with dependents in five of the leading occupations or trades of the country,—for the

chief towns and cities in 1888 and 1889, and for the whole province in 1887, 1888 and 1889. The first table gives averages for the trade of blacksmith :

Blacksmith.		No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Total cost of living.	Cost per capita.	Surplus or deficit (-).
			No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Chatham	1889	2.33	59.75	264.17	433 33	.....	.....	433 33	390 33	117 10	43 00
	1888	3.29	59.79	246.71	427 14	10 21	.....	437 35	405 00	94 50	32 35
Guelph	1889	3.29	59.86	290.00	441 14	7 14	.....	448 28	401 37	93 63	46 91
	1888	4.63	59 13	280.75	474 25	.....	.....	474 25	505 38	89 84	-31 13
Perth	1889	3.78	59.22	280.44	478 33	.....	8 33	486 66	454 92	95 22	31 74
	1888	4.33	60.00	278.00	472 17	.....	.....	472 17	451 17	84 59	21 00
St. Catharines	1889	3.80	60.00	277.20	495 95	.....	.....	495 95	476 20	99 21	19 75
	1888	4.80	59.40	263.20	475 15	.....	9 60	484 75	394 60	68 03	90 15
Stratford	1889	3.60	60.00	290.80	431 10	5 00	.....	436 10	407 00	88 65	29 10
	1888	3.50	56.00	286.00	483 33	.....	.....	483 33	408 17	90 70	75 16
Toronto	1889	3.00	58.18	281.09	446 36	.....	40 91	487 27	497 55	124 39	-10 28
	1888	3.73	59.64	265.55	486 46	.....	5 45	491 91	461 38	88 73	30 53
The Province	1889	3.75	58.76	278.51	445 32	1 77	8 89	455 98	422 56	89 00	33 42
	1888	3.77	58 94	273.57	473 33	5 65	3 82	482 80	438 61	91 87	44 19
	1887	3.59	58.67	274.77	449 15	6 60	8 33	464 08	423 66	92 22	40 42

In each place the average of time emp oyed is greater in 1889 than in 1888, ranging from two days in Perth to eighteen in Chatham, but the average for the whole province was only greater by 4.94 days, and only 3.74 days greater than in 1887. But the earnings from occupation for the province was less than in 1887 by $3.83, and less than in 1888 by $28.91. For the whole province the cost of living per capita varied by only $3.22 in the three years, and the average surplus is closely proportioned to the total earnings.

The next table presents a comparison for the trade of carpenter in nine towns and cities for two years, and in the whole province for three years :

Carpenter.		No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Total cost of living.	Cost per capita.	Surplus or deficit (-).
			No.	No.	$ c	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Brantford	1889	2.75	59.25	250.25	451 75	.....	.....	451 75	406 89	108 50	44 86
	1888	5.17	56.50	254.33	427 58	1 67	33 33	462 58	397 00	64 38	65 58
Guelph	1889	2.83	57.33	266.67	418 33	.....	.....	418 33	397 83	103 78	20 50
	1888	4.00	59.18	269.18	496 18	.....	9 09	505 27	484 27	96 85	21 00
Hamilton	1889	3.58	56.25	234.42	437 67	5 00	22 92	465 59	431 92	94 24	33 67
	1888	5.29	53.57	230.57	445 50	15 71	4 29	465 50	481 83	76 65	-16 33
London	1889	5 67	50.50	293.17	452 59	19 08	17 33	489 00	434 73	65 21	54 27
	1888	3.69	50.96	268.08	459 69	.....	5 77	445 46	441 44	94 16	4 02
Peterborough	1889	4.80	55.20	289.60	456 00	.....	.....	456 00	411 40	70 93	44 60
	1888	3.50	60.00	220.00	363 00	.....	16 67	379 67	410 48	91 22	30 81
St. Catharines	1889	3.40	58.60	253.60	459 20	24 00	6 00	489 20	446 00	101 36	43 20
	1888	2.55	54.55	262.00	495 19	4 54	.....	499 73	411 35	118 01	88 38
St. Thomas	1889	3.33	55.50	273.33	469 16	6 67	10 00	485 83	457 75	105 62	28 08
	1888	4.80	57.40	275.80	492 04	.....	.....	492 04	453 84	78 25	38 20
Stratford	1889	3.25	54.00	278.75	490 00	.....	.....	490 00	407 95	95 82	82 75
	1888	3.38	56.13	276.38	473 13	.....	.....	473 13	394 38	90 14	78 75
Toronto	1889	2.60	49.70	270.00	547 81	.....	21 50	569 31	496 96	138 04	72 35
	1888	3.94	47.35	292.82	500 56	.....	8 35	508 91	494 32	100 04	14 59
The Province	1889	3.77	57.32	257.47	426 63	7 41	12 37	446 41	408 83	85 76	37 58
	1888	3 84	54.82	267.55	457 00	2 99	9 17	469 16	433 81	89 70	35 35
	1887	3.98	53.47	240.66	418 09	6 49	14 12	438 70	416 06	83 62	22 64

The noticeable feature of this table is the shorter hours of labor per week in Toronto as compared with all other places except London; but in Toronto the average in 1889 was 2.35 hours more than in 1888. None of the places specified in the table exhibits a deficit for 1889, but Hamilton and Peterborough record deficits for the previous year. The provincial averages for cost of living per capita and surplus in the three years keep within close margins.

In the next table is exhibited for eight towns and cities the same comparison for machinists in 1888 and 1889, and for the whole province in the three years:

Machinist.		No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Total cost of living.	Cost per capita.	Surplus or deficit (−).
		No.	No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Carleton Place	1889	3.57	58 71	296.14	536 55	4 28	.....	540 83	510 07	111 58	30 76
	1888	3.00	53.40	279.80	504 30	.....	12 00	516 30	482 74	120 69	33 56
Galt	1889	4.14	56.29	288.86	521 33	8 57	...	529 90	470 85	91 55	59 05
	1888	5.40	57.80	286.60	548 40	12 00	20 00	580 40	536 14	83 77	44 26
Gananoque	1889	3.80	60 00	274.40	522 99	....		522 90	443 90	92 48	79 00
	1888	4 20	56.80	284.00	555 10	4 00	16 80	575 90	522 20	104 23	53 70
Guelph	1889	3.64	59.00	273.18	463 73	13 64	....	477 37	431 64	93 10	45 73
	1888	2.82	59.00	254.55	454 36	0 46	.....	454 82	446 91	117 05	7 91
Hamilton	1889	3.63	55.34	231.06	412 69	24 44	13 44	450 57	418 03	96 87	2 54
	1888	3.29	58.36	264.36	457 56	4 64	.....	462 20	441 53	103 03	20 67
London	1889	3.44	56.11	261.22	399 24	2 78	.	402 02	412 71	92 86	-10 69
	1888	4.00	59 27	290 55	531 45	10 64	11 36	553 45	446 28	89 26	107 17
Stratford	1889	2.95	52 10	284.10	446 00	1 00	11 25	458 25	422 15	106 87	36 10
	1888	4.18	56.82	282.55	454 54	2 27	4 55	461 36	423 82	81 79	37 54
Toronto	1889	3.25	58.13	268.25	498 65	.....	33 00	531 65	554 59	130 49	-22 94
	1888	2.38	56.25	290.50	550 54	.....	....	550 54	521 57	154 54	28 97
The Province	1889	3.56	56.77	276.94	479 34	7 38	5 97	492 69	451 37	99 00	41 32
	1888	3.63	58 06	275.91	487 56	4 74	6 57	498 87	455 75	98 49	43 12
	1887	3.83	56.84	271.03	448 47	9 82	15 12	473 41	419 39	86 81	54 02

Carleton Place, Galt, Gananoque and Toronto each show total earnings exceeding $500, which is a little in excess of the average for the province. In the case of Toronto a substantial addition is made by the earnings of dependents; yet that city and London are the only places in which the average earnings fell below the cost of living. In the previous year London's average surplus was double that of any other of the towns in the table.

The statistics of moulders are presented in the next table for four places:

Moulder.		No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Total cost of living.	Cost per capita.	Surplus or deficit (−).
		No.	No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Brockville	1889	3.86	60.00	267.14	535 71	3 57	....	539 28	436 71	89 91	102 57
	1888	2.88	60.24	281.29	436 69	.....	.....	436 69	401 96	103 53	34 73
Guelph	1889	5.40	59.00	289.00	578 00	.....	.....	578 00	502 60	78 53	75 40
	1888	4.63	58.75	267.13	518 00	.....	.....	518 00	476 88	84 78	41 12
London	1889	5.00	60.00	283.20	537 24	.....	28 00	565 24	502 62	83 77	62 62
	1888	3.79	58.79	271.93	442 21	.....	.....	442 21	432 43	90 36	9 78
Oshawa	1889	4.20	55.00	269.60	605 20	6 00	.....	611 20	549 28	105 63	61 92
	1888	4.13	53.25	278.13	672 63	21 25	.....	693 88	589 87	115 10	104 01
The Province	1889	3.89	58.93	275.76	538 28	1 18	5 05	544 51	472 37	96 58	72 14
	1888	3.53	57.81	267.11	504 38	2 99	4 46	511 83	461 15	101 72	50 68
	1887	3.96	58.30	251.25	498 41	6 56	15 91	520 88	454 17	91 50	66 71

Here Oshawa leads in earnings, although not in time employed. It also leads for both years in cost of living per capita; yet its surplus is lower in 1889 than that of either of the other places specified, and lower also than the provincial average.

The fifth table gives the figures of the painters' trade for six places:

Painter.		No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Total cost of living.	Cost per capita.	Surplus or deficit (—).
			No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Cobourg	1889	3.40	59.40	282.66	352 50	..	...	352 50	379 10	74 80	23 40
	1888	3.67	58.83	260.83	442 83	24 17	...	467 00	456 83	97 89	10 17
Guelph	1889	2.75	59 00	287.50	459 50	.....	... ..	459 50	398 50	106 27	61 00
	1888	3.00	58.00	264.3..	410 67	.....	.....	440 67	441 78	110 44	-1 11
Hamilton	1889	3.17	57.33	211.67	368 83	15 00	....	383 83	398 67	95 68	-14 84
	1888	2.78	51.22	209.44	375 27	20 00	....	395 27	379 14	100 36	16 13
London	1889	3.71	50.57	271.43	342 56	33 28	23 00	398 84	385 44	81 76	13 40
	1888	3.18	54.71	249 24	368 88	.....	12 06	380 94	393 82	94 50	12 88
Perth	1889	3.83	60.00	253.50	400 00	6 67	25 33	432 00	428 33	88 62	3 67
	1888	3.60	60.00	269.60	414 20	....	.. .	414 20	402 80	87 57	11 40
Toronto	1889	3.00	51.80	244.90	480 52	....	.....	480 52	507 01	126 75	-26 49
	1888	4.25	53.13	246.13	496 03	.. ...	....	496 03	485 63	92 50	10 40
The Province	1889	3.48	57 01	258.22	410 10	6 52	9 4'	426 03	465 57	90 56	20 46
	1888	3.53	56.00	250 58	418 17	5 92	7 25	431 34	417 08	92 02	14 26
	1887	3.58	57.23	246 06	407 92	9 26	5 36	422 54	400 13	87 37	22 41

In Hamilton the working time of the year was much below the average of the province, as was also the total earnings, for which cause that city exhibits a deficit. In Toronto the high cost of living is responsible for the same result.

Comparative Earnings and Cost of Living by Occupations. — The following table shows averages of time employed, wages earned and cost of living for workers with dependents in twenty-nine of the other principal occupations for the two years 1888 and 1889, computed from the statistics of the province:

Occupations.		No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Total cost of living.	Cost per capita	Surplus or deficit ( ).
			No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Baker	1889	3.73	68.27	302.42	465 93	2 27	5 18	473 38	447 60	94 68	25 78
	1888	3.13	62.57	290.26	485 83	.....	6 09	491 92	448 62	108 61	43 30
Blacksmith's helper	1889	3.00	57.11	273.79	327 65	5 66	7 79	341 10	351 27	87 82	-10 17
	1888	2.90	57.14	273.48	339 38	7 86	17 86	365 10	351 41	90 00	13 69
Boilermaker	1889	4.11	56.32	279.68	470 10	2 10	24 00	496 20	470 23	92 11	25 97
	1888	3.40	55.40	277.50	547 40	4 00	.....	551 40	533 08	121 15	18 32
Bricklayer	1889	4.49	56.60	199.65	491 09	4 11	11 75	506 95	446 80	81 37	60 15
	1888	4.13	56.13	189.84	482 95	0 79	3 37	487 11	450 26	87 74	36 85
Cabinetmaker	1889	3.40	57.72	278.30	448 93	2 54	10 60	462 07	419 06	95 24	43 01
	1888	3.28	58.40	279.48	448 30	6 00	7 24	461 54	430 84	100 66	30 70
Cigarmaker	1889	3.16	50 00	265.37	374 05	0 79	31 37	406 21	418 24	100 59	12 03
	1888	2.09	53.00	293.73	485 09	....	...	485 09	398 81	129 03	86 28
Cooper	1889	3.54	58.63	266.13	382 80	3 75	18 75	405 30	378 16	83 26	27 14
	1888	3.33	56.00	268.22	364 67	0 66	17 00	382 33	369 78	85 33	12 55

COMPARATIVE EARNINGS AND COST OF LIVING.—*Continued.*

Occupations.		No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Total cost of living.	Cost per capita.	Surplus or deficit ( ).
			No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Engineer (stationary)	1889	3.90	65.10	293.67	429 41	3 53	10 24	443 18	402 59	82 13	40 59
	1888	4.50	64.53	282.80	420 12	8 57	12 93	441 62	398 80	72 51	42 82
Fireman	1889	3.65	66.65	274.12	349 06	8 82	40 06	397 94	371 26	79 89	26 68
	1888	4.25	63.00	285.38	375 88	.....	9 37	385 25	364 13	69 36	21 12
Harnessmaker	1889	3.25	59.63	279.78	416 63	7 99	20 94	445 56	402 96	94 81	42 60
	1888	3.75	57.69	289.00	404 91	0 62	28 44	433 97	413 01	86 95	20 96
Laborer (builder's)	1889	3.62	54.92	202 87	295 49	29 59	36 69	361 77	356 24	77 19	5 53
	1888	4.36	53.21	217.50	320 22	4 67	24 78	349 67	346 63	64 70	3 04
Laborer (general)	1889	3.71	59.94	259.43	302 60	7 00	30 26	339 86	343 07	72 80	-3 21
	1888	3.89	58.05	258.38	311 66	7 16	31 06	349 88	350 32	71 58	-0 44
Machine hand	1889	3.76	57.44	277.02	393 02	6 11	19 84	418 97	389 32	81 87	29 65
	1888	3.45	56.93	263.28	415 54	21 69	1 73	438 96	413 86	93 04	25 10
Miller	1889	3.62	62.15	288.08	468 77	7 69	.. ....	476 46	431 23	93 43	45 23
	1888	3.86	64.57	270.71	455 38	10 72	....	466 10	419 57	86 38	46 53
Plasterer	1889	3 29	56.12	208.94	449 47	5 88	9 12	464 47	415 56	96 78	48 91
	1888	4.38	55.06	224.25	518 11	3 12	10 94	532 17	488 60	90 90	43 57
Plumber	1889	3.52	56.04	277.63	493 25	0 39	18 37	512 01	473 71	104 84	38 30
	1888	4.29	56.07	269.86	511 36	.....	7 14	518 50	464 54	87 89	53 96
Printer	1889	3.24	58.98	286.63	450 25	7 12	29 83	487 20	464 52	109 46	22 68
	1888	3.07	57.27	291.37	508 68	10 70	10 67	530 05	492 53	121 11	37 52
Railway car repairer	1889	4.20	55.60	284.53	417 27	1 33	19 07	437 67	427 73	82 26	9 94
	1888	3.92	57.85	296 54	406 54	4 61	5 54	416 69	413 88	84 07	2 81
Salesman	1889	2 90	63.05	302.29	478 71	4 29	3 90	486 90	433 77	111 09	53 13
	1888	2.76	60.29	277.59	488 41	.....	16 30	504 71	416 41	110 61	88 30
Shoemaker	1889	3.56	59.45	266.38	387 66	6 67	13 08	407 41	396 67	86 94	10 74
	1888	3.29	58.88	281.22	410 87	3 71	12 70	427 28	392 21	91 37	35 07
Stonecutter	1889	4.25	54.75	217.00	553 51	4 50	.....	558 01	526 21	100 23	31 80
	1888	4.64	57.80	242.40	543 62	3 76	8 80	556 18	482 93	85 63	73 25
Stonemason	1889	4.22	58.49	197.30	470 48	6 22	9 13	485 83	433 69	83 14	52 14
	1888	4.38	56.90	182.52	491 90	2 24	.....	494 14	457 72	85 09	36 42
Stovemounter	1889	3.54	58.54	247.54	369 70	0 92	10 77	381 39	400 94	88 34	-19 55
	1888	3.14	55.86	205.00	326 95	8 57	17 00	352 52	372 71	89 97	-20 19
Tailor	1889	3.41	59.66	258 58	469 63	....	26 18	486 81	437 21	99 23	49 60
	1888	3 12	59 00	247 08	419 04	5 60	1 00	426 24	387 22	93 99	39 02
Teamster	1889	4.15	64 19	302.40	369 69	7 55	12 13	389 37	369 62	71 77	19 75
	1888	4.05	61 10	287 57	356 49	0 48	7 66	364 63	345 03	68 36	19 60
Tinsmith	1889	3.49	58.41	277.00	430 46	3 62	3 20	437 28	403 17	89 85	34 11
	1888	3 55	58.29	285 55	457 24	.....	14 52	471 76	441 56	97 08	30 20
Upholsterer	1889	4.00	59.33	286.47	488 71	2 07	3 33	494 11	445 37	89 07	48 74
	1888	4.67	56.33	281 35	466 53	.....	50 00	516 53	482 00	85 05	34 53
Wood turner	1889	4 10	58 35	270.10	471 30	2 00	2 50	475 80	425 20	83 37	50 60
	1888	3.92	56.83	279.50	472 42	4 16	16 25	492 83	446 62	90 84	46 21
Woodworker	1889	3.44	56 87	279.9	453 1	10 69	3 33	467 12	402 84	90 81	64 28
	1888	3.83	56 92	258 83	397 25	1 17	.....	398 46	408 96	84 61	-10 50

Stonecutters alone earned over $500 in 1889; but in 1888 the list included boilermakers, plasterers, plumbers and printers as well as stonecutters. There were eighteen occupations in 1889 and sixteen in 1888 in which the averages were over $400 but less than $500. There is wide diversity in cost of living, both in the aggregate and the per capita, being in a great majority of cases apparently regulated by the amount of earnings, but blacksmiths' helpers, cigarmakers, laborers, stovemounters and woodworkers are the only occupations in which earnings fell below the cost of living—stovemounters and general laborers showing a deficit for both years. Comparing workers by the average of working

hours per week, it will be observed that bakers, stationary engineers and firemen labor between sixty-five and seventy hours, and millers, salesmen and teamsters between sixty and sixty-five hours, while in the remaining occupations the working time of twenty is between fifty-five and sixty hours per week. A comparison by localities for these occupations is not possible as the data for 1888 are not now available. The statistics by localities for 1889 are given in Table x.

Itemized Cost of Living by Localities.—The table which follows shows by localities the average cost of living to workers with dependents (householders only) under the heads of rent (for tenants) and fuel, and of clothing and food per capita, for the years 1888 and 1889 and for the five years 1885-9 :

Localities.	Rent.			Fuel.			Clothing per capita.			Food per capita.		
	1889	1888	1885 9	1889	1888	1885-9	1889	1888	1885-9	1889	1888	1885-9
	$ c.	$ c.	$ c.	$ c.	$ c	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Bowmanville	76 06	71 82	73 94	51 03	45 85	48 44	28 34	22 27	25 31	31 45	42 06	36 76
Brantford	74 21	74 82	69 30	35 83	43 95	40 10	22 12	18 44	22 15	49 93	45 69	46 35
Brockville	81 56	81 48	74 56	38 80	43 05	46 36	25 66	22 27	19 27	44 76	43 52	44 47
Carleton Place	77 92	76 53	75 86	31 58	39 62	38 52	15 52	13 38	15 16	42 56	44 94	46 99
Chatham	68 69	64 13	65 95	32 87	29 94	29 77	15 02	17 06	17 66	51 09	50 38	47 60
Cobourg	62 83	63 45	63 14	38 81	48 50	43 66	12 69	27 02	19 86	34 02	33 53	33 78
Cornwall	73 30	77 12	73 28	41 10	42 67	38 57	12 42	17 15	14 22	39 79	40 47	42 56
Galt	73 84	73 88	72 42	35 81	35 38	38 41	19 69	17 82	17 99	52 75	50 71	50 87
Gananoque	65 65	65 47	61 47	39 96	40 54	39 32	17 89	19 98	19 76	40 27	40 90	43 89
Guelph	73 68	66 79	67 54	46 64	48 03	43 40	15 20	15 72	15 09	44 53	44 05	42 03
Hamilton	90 05	81 62	83 13	37 13	38 05	39 33	13 89	13 43	14 94	38 65	47 74	49 04
Kingston	68 72	70 20	69 78	31 88	41 64	39 23	22 28	18 92	18 06	49 63	43 19	44 06
London	66 74	77 41	72 25	37 45	40 85	40 09	15 91	18 59	16 94	46 54	47 31	47 31
Oshawa	65 72	66 41	60 89	42 67	44 31	41 52	11 70	12 91	13 83	45 92	41 90	49 58
Ottawa	110 01	71 00	89 67	33 87	37 71	35 35	11 94	13 14	15 94	35 15	45 70	41 06
Perth	62 32	69 56	65 94	32 74	37 35	35 05	19 16	22 79	20 98	36 71	34 29	35 50
Peterborough	86 17	67 38	72 97	32 87	39 06	39 10	16 48	15 00	21 08	33 85	44 37	51 07
St. Catharines	55 80	69 93	58 06	40 82	39 84	41 72	18 79	13 88	16 25	52 99	45 57	47 03
St. Thomas	41 83	79 30	71 76	35 90	40 67	40 14	14 43	17 04	18 55	39 64	48 11	48 41
Stratford	80 29	77 18	73 40	40 80	39 31	39 82	23 75	23 53	25 04	35 20	40 28	38 40
Toronto	110 87	121 62	109 59	39 64	45 85	43 61	16 67	15 97	18 47	56 89	45 62	51 60
The Province	81 24	77 63	77 50	37 75	41 78	40 12	17 10	17 41	17 65	42 76	44 14	44 67

In ten out of these twenty-one places rent was higher in 1889 than in 1888, and in fifteen it was higher than the average of the five years 1885-9; the average for the province (which includes all places giving returns) was higher in 1889 than for the five years by $3.74. Fuel on the other hand was lower than the average for the five years by $2.37, being higher in only seven places out of the twenty-one. Clothing and food per capita were also lower in 1889 than for the average of five years — the former by 55 cents and the latter by $1.91. In seven places clothing was higher and in ten places food was higher per capita. It may here be stated that the average charge to owners for taxes, interest and instalments on their dwellings in 1889 was $42 26, based on 787 returns out of a possible 842, as shown by Table xi. A further examination of Table xi. will show that in twenty-one out of thirty-five places the cost of living per capita, based on returns furnished by 2,476 male

householders in 1889, was lower for owners than for tenants, with one place equal, the difference for the whole province being $8.36. In eighteen out of thirty-four places the cost of clothing and of food were lower per capita for owners than for tenants; but for the province the average cost of clothing was higher per capita in the case of owners by 87 cents and the cost of food lower by 72 cents. The greater economy to owners is effected under the head of shelter; for, while they pay only $42.26 per annum for taxes, interest and instalments on their dwellings, householders of the tenant class pay $81.24. There are five places only, viz, Gananoque, Hamilton, Perth, St. Thomas and Toronto, in which the cost of taxes, interest and instalments is in excess of rent.

Extra Earnings, Society Dues and Life Insurance.—The following table gives for twenty-one places the averages of extra earnings and earnings by dependents, and of society dues and life insurance for the two years 1888 and 1889:

Localities.	Extra earnings of self outside of regular occupation.				Earnings of dependents.		Society dues and life insurance.			
	With dependents.		Without dependents.				With dependents.		Without dependents.	
	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Bowmanville	22 67	20 25	15 33	18 00	27 67	46 38	13 90	16 89	13 00	18 20
Brantford	55 60	27 14	25 00	15 00	121 00	121 25	21 95	17 52	24 69	20 53
Brockville	53 33	27 50	40 00	55 00	180 00	88 50	22 19	13 28	20 04	14 87
Carleton Place	40 00	25 00	5 50	50 00	94 00	72 64	16 46	17 82	18 11	17 18
Chatham	58 62	59 61	35 00	39 50	103 50	68 57	26 92	21 10	.....	11 00
Cobourg	23 43	61 00	10 00	.....	51 78	35 00	18 77	19 69	16 05	16 00
Cornwall	23 54	30 00	21 00	15 00	96 83	90 09	14 60	9 36	26 62	12 70
Galt	48 67	50 00	37 50	13 33	93 75	75 42	32 60	17 30	33 87	37 57
Gananoque	69 88	149 00	22 75	34 00	114 60	53 43	13 00	28 19	13 00	13 79
Guelph	53 14	59 50	.....	.....	75 00	62 85	18 07	16 86	20 78	14 04
Hamilton	63 76	52 97	19 38	26 00	108 48	80 78	11 38	15 08	8 95	12 83
Kingston	103 38	71 62	20 00	53 33	132 67	117 58	14 01	14 37	9 43	9 96
London	49 68	35 20	16 27	.....	107 00	122 50	15 63	15 49	10 17	18 71
Oshawa	75 83	81 25	.....	.....	173 33	262 50	16 41	22 75	10 72	9 06
Ottawa	32 56	13 33	31 00	10 00	62 02	50 00	8 47	14 73	6 54	10 17
Perth	28 65	12 00	28 00	.....	55 23	40 00	17 77	17 71	14 46	15 31
Peterborough	53 33	65 67	.....	.....	53 75	101 00	27 27	15 60	31 40	12 45
St. Catharines	43 60	58 67	14 75	25 00	90 09	50 15	15 16	11 28	11 24	5 52
St. Thomas	58 75	59 40	.....	.....	36 00	30 00	24 37	26 93	18 55	17 13
Stratford	60 94	46 92	69 17	20 00	87 67	48 13	21 57	19 28	19 61	16 19
Toronto	91 33	29 00	55 25	26 61	148 94	98 57	13 12	9 69	12 57	6 11
The Province:										
Average amount	53 51	54 80	32 77	28 84	96 22	88 24	17 45	15 53	15 01	12 91
No. of returns	336	182	105	51	379	216	1,428	1,176	463	403
Percent. of possible	13.2	9.8	8.2	5.7	14.9	11.6	56.3	63.2	36.3	45.2

It will be observed that the extra earnings and earnings of dependents are credited to a comparatively small number of the total workers who have made returns; consequently the averages are much higher in this table than they appear when computed on the basis of the total number of workers. Of 336 workers with dependents in 1889, which are only 13.2 per cent. of the whole, the average of extra earnings was $53.51, while of 105 workers without dependents (8.2 per cent. of the whole) the average was $32.77. The earnings of dependents, as given by 379 workers in 1889, was $96.22, being $7.98 more than the average as given by 216 for the previous year. A large proportion of workers with dependents, it will be seen, pay a share of their earnings for society dues and life insurance—56.3 per cent. of the whole number in 1889 and 63.2 per cent in 1888. Their average payments for these objects in the former year was $17.45 and in the latter $15.53. The proportion of workers without dependents who pay for dues and insurance is much lower, although the difference in the sums they pay is not large, being $2.44 less in 1889 and $2.62 less in 1888 than for workers with dependents.

EARNINGS AND COST OF LIVING IN RELATION TO DEPENDENTS.—In the next table is presented for owners and tenants a comparative statement of days employed, earnings and cost of living, according to the number of dependents of the workers :

Schedule.		Range of number of dependents.								Total.
		1	2	3	4	5	6	7	Over 7	
No. of returns in range.	Owner	101	152	146	154	121	93	39	36	842
	Tenant	215	281	374	313	206	134	78	33	1,634
	Total. 1889	316	433	520	467	327	227	117	69	2,476
	Total. 1888	233	340	396	361	231	148	84	67	1,860
Average per worker in range :										
Days employed....No.	Owner	266.14	276.41	276.81	268.67	270.76	269.61	270.77	277.61	272.06
	Tenant	268.39	275.10	270.70	269.07	265.52	264.60	266 33	263.79	269.34
	Total	267.67	275.56	272.41	268 94	267.46	266.66	267.81	271.00	270 26
Wages from occupation.....$	Owner	398.70	444.84	442.67	433.75	468.69	486 09	463.10	424.40	444.85
	Tenant	407.14	440.15	421.57	432 63	433.91	430.41	442.64	426 22	428.36
	Total	404.44	441.80	427.49	433.00	446.78	453.21	449.46	425.27	433.97
Earnings of dependents and extras of self..$	Owner	7.36	8 63	12.18	26.70	24.33	42.15	28.30	91.67	22.82
	Tenant	8.73	10.02	15.88	20.70	24.14	35.45	52.03	101.94	20.97
	Total	8.29	9.53	14.86	22.68	24.21	38.20	44.12	96.58	21.60
Total earnings.....$	Owner	406.06	453.47	454.85	460.45	493.02	528.24	491.40	516.07	467.67
	Tenant	415.87	450.17	437.45	453.33	458.05	465.86	494.67	528 16	449.33
	Total. 1889	412.73	451.33	442.35	455 68	470.99	491.41	493.58	521.85	455.57
	Total. 1888	426.47	436.88	454.39	469 16	480.39	497.21	.....	*519.01	462.44
Cost of clothing, per capita.....$	Owner	32.54	25.65	19 04	16.88	16.22	13 92	14.01	11.19	17.65
	Tenant	33.71	24 48	18 07	15.69	13.17	12.27	11.09	11.92	16.82
	Total. 1889	33 32	24.87	18.34	16 07	14.27	12.95	12.06	11.55	17.10
	Total. 1888	36 09	24.03	19.12	16.78	14.07	12.71	.....	*11.83	17.41
Cost of food, per capita..... ..$	Owner	86.39	59 45	48.38	40.26	35.44	34 28	29.50	27.70	42.29
	Tenant	84 83	61.03	48.02	39 85	34 90	30.82	30.01	27.88	43 01
	Total. 1889	85.34	63 36	48.13	39.98	35 10	32.23	29.84	27.80	42.76
	Total. 1888	84.48	59.97	48.93	41.70	37.12	34.30	.....	*31.09	44.14
Total cost of living....$	Owner	333.19	377.39	395.81	410.60	443.38	471 44	463.70	477.78	409.75
	Tenant	381.33	407.94	411 08	431.59	449.90	466.89	484.16	541.53	426 15
	Total. 1889	365.94	397.22	406 80	424.67	447.49	468.75	479.01	508.27	420.57
	Total. 1888	370.87	387.16	414.25	431.00	453.21	469.96	.....	*501.17	423.44
Cost of living, per capita.....$	Owner	166.59	125.80	98.95	82.12	73.90	67.35	58.59	48.86	85.12
	Tenant	190.67	135.98	102 77	86.32	74.98	66.70	60 52	56.37	93.48
	Total. 1889	182.97	132.41	101.79	84.93	74.58	66.96	59.88	5? 42	90.54
	Total. 1888	185.44	129.05	103.56	86.20	75.54	67.14	.....	*57.16	91 36
Surplus.....$	Owner	72.87	76 08	59.04	49.85	49.64	56.80	22.70	38.29	57 92
	Tenant	34.54	42.23	26.37	21.74	8.15	-1.03	10.51	—13.37	23.18
	Total. 1889	46.79	54.11	35.55	31 01	23.50	22.66	14.57	13 58	35.00
	Total. 1888	55.60	49.72	40.14	38.16	27.18	27.25	.....	*17.84	39.00

*Average for workers with seven dependents and over.

The number of workers with seven or more dependents is small compared with those having a fewer number, although their time of employment is a little higher. Their wages from occupation, however, are lower, owing it may be to impairment of usefulness by old age. But this is more than offset by earnings of dependents and extras. The total cost of living increases with the number of dependents, but the per capita cost steadily decreases throughout the range for clothing and food, as well as for all objects. In two ranges only, where the number of dependents is six and over seven, is the average cost of living in excess of earnings, and in each case it occurs in the tenant class. The highest averages of surpluses are attained by householder workers who are owners of their dwellings, and of these the workers with one, two or three dependents are credited with the largest savings.

COMPARATIVE EARNINGS AND COST OF LIVING BY DAYS EMPLOYED. — In the first of the following tables the classification of range of days employed is made for 2,537 workers with and 1,277 without dependents, separately :

Range of days employed.	No. of workers.	Average per worker in range.							
		No. of dep.	Days employed.	Yearly earnings.				Cost of living.	Surplus or deficit (-).
				Wages.	Daily rate.	Extras.	Total.		
With dependents :			No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
150 and under.	59	3.53	128.83	234 59	1 84	64 83	299 42	335 97	-36 55
150 to 200.....	169	3.68	182.70	330 80	1 81	46 39	377 19	393 58	-16 39
200 to 225.....	157	3.83	214.82	369 29	1 72	33 46	402 75	398 58	4 17
225 to 250.....	315	3.64	240.61	402 55	1 67	20 19	422 74	407 98	14 76
250 to 275.....	438	3.66	266.07	427 22	1 61	17 88	445 10	416 16	28 94
275 to 300.....	906	3.54	291.82	464 97	1 59	18 16	483 13	431 89	51 24
Over 300	493	3.54	317.34	476 02	1.50	13 96	489 98	432 72	57 26
Average	2,537	3.60	270.15	432 63	1 60	21 46	454 09	419 52	34 57
Without dependents :									
150 and under.....	25	.....	131.40	219 15	1 67	35 80	254 95	242 92	12 03
150 to 200.....	82	.....	182 98	261 76	1 43	13 73	275 49	239 26	36 23
200 to 225.....	73	.....	215 60	287 68	1 33	4 22	291 90	246 03	45 87
225 to 250.....	144	.....	240 83	308 43	1 28	3 00	311 43	256 12	55 31
250 to 275.....	210	.....	265.56	314 34	1 18	0 92	315 26	248 00	67 26
275 to 300.....	499	.....	292.61	330 14	1 13	0 60	330 74	260 65	70 09
Over 300	244	.....	312.56	354 68	1 13	0 76	355 44	260 78	94 66
Average.....	1,277	.....	271.53	320 79	1 18	2 70	323 49	255 53	67 96

In the case of 59 workers, each of whom was employed less than 150 days in the year—their average being 128 83 days—cost of living exceeded earnings by $36.55 ; while in the case of 169 others working 150 to 200 days, or an average of 182.70, the excess of cost of living was $16.39. It will be observed that while there is a regular gradation of increase in wages earned, cost of living and surplus of earnings according to the range of days employed, there is also a regular gradation of decrease in the daily rate of wages and also in the extra earnings.

The next table summarises a comparative statement by range of days employed for both classes of workers conjointly :

Schedule.	Range of days employed.							
	150 and under	150 to 200	200 to 225	225 to 250	250 to 275	275 to 300	Over 300	Average.
No. of returns in range	84	251	230	459	648	1,405	737	3,814
No. of days employed.....	129.60	182.79	215.07	240 68	265.91	292.10	315.76	270.62
Wages from occupation.....$	230 00	308 21	343 39	373 02	390 63	417 08	435 85	395 18
Average daily rate.....$	1 77	1 69	1 60	1 55	1 47	1 43	1 38	1 46
Extra earnings .....$	56 19	35 72	24 18	14 80	12 39	11 93	9 59	15 18
Total yearly earnings..... $	286 19	343 96	367 57	387 82	403 02	429 01	445 44	410 36

The same gradation of wages from occupation, daily rate and extra earnings, according to range of days employed, are observable in this as in the foregoing table, from which it may be inferred that in the mass length of employment is in inverse ratio to the skill of the employer. Out of 3,814 workers in the table, 1,024 employed not more than 250 days in the year receive wages averaging $1.77 to $1.55; whereas of 2,790 employed over 250 days, the wages range from $1.47 to $1.38 per day, according in each case to the range of days employed.

Comparative Earnings and Cost of Living by Range of Surplus or Deficit.—In the two tables which follow comparison is made of days employed, total earnings and cost of living for workers with and without dependents, by range of surplus or deficit. The first table presents the averages for 1889 only:

Earning more than cost of living.	Workers with dependents.						Workers without dependents.				
	No.	No. of dependents.	Days employed.	Total earnings.	Cost of living.	Surplus.	No.	Days employed.	Total earnings.	Cost of living.	Surplus.
			No.	$ c.	$ c.	$ c.		No.	$ c.	$ c.	$ c.
$10 and under	189	3.59	270.70	430 05	424 92	5 13	70	262.41	243 09	238 17	4 92
$10 to $20	148	3.60	272.61	438 03	422 65	15 38	83	273.12	245 76	230 29	15 47
$20 to $30	145	3.75	272.40	439 42	413 72	25 70	67	276.87	289 43	263 74	25 69
$30 to $40	149	3.38	273.41	452 76	417 01	35 75	60	276.57	303 36	267 51	35 85
$40 to $50	138	3.33	272.22	469 72	423 83	45 89	71	275.04	306 89	260 60	46 29
$50 to $75	251	3.43	278.82	481 00	418 40	62 60	138	277.20	330 77	266 52	64 25
$75 to $100	209	3.38	286.31	496 75	408 10	88 65	132	277.77	374 34	286 17	88 17
$100 to $150	194	3.09	285 52	528 41	403 92	124 49	167	277.07	409 06	284 12	124 94
$150 to $200	97	3.21	283.38	585 34	412 02	173 32	112	280.21	447 90	271 96	175 94
$200 to $300	56	3.00	293.95	715 78	471 80	243 98	63	290.73	505 54	269 87	235 67
Over $300	22	3.55	301.14	871 16	486 58	384 58	14	293.43	658 36	288 90	369 46
Average	1,598	3.41	279.30	491 36	418 80	72 56	977	275.85	359 67	267 67	92 00
Earnings equal to cost of living	345	3.99	261.44	405 66	405 66	.....	170	265.51	207 64	207 64	.....
Earnings less than cost of living						deficit					deficit
$10 and under	133	3.85	266.05	414 23	419 15	4 92	46	266.83	212 39	217 10	4 71
$10 to $20	87	3.91	262.85	393 52	408 92	15 40	34	249.32	195 00	210 19	15 19
$20 to $30	74	3.81	251.45	397 71	423 00	25 29	16	247.94	215 40	240 03	24 63
$30 to $40	63	3.78	252.27	371 43	406 57	35 14	11	225.18	206 31	242 46	36 15
$40 to $50	53	4.17	262.11	385 99	432 21	46 22	7	201.86	188 71	232 80	44 09
$50 to $75	69	3.81	239 80	375 45	437 44	61 99	10	249.40	206 20	272 82	66 62
$75 to $100	45	4.27	237.76	36 44	423 34	86 90	2	142.00	152 00	230 00	78 00
$100 to $150	36	3.69	228.31	350 78	470 58	119 80	4	181.00	146 75	258 00	111 25
$150 to $200	17	3.41	200.71	334 07	509 80	175 73	.....	.....	.....	.....	.....
Over $200	17	4.35	196.06	289 20	538 10	248 90	.....	.....	.....	.....	.....
Average	594	3.89	250.60	81 96	429 52	47 56	130	246.96	203 00	226 85	23 85
Average for all.	2,537	3.60	270.15	454 09	419 52	34 57	1,277	271.53	323 49	255 53	67 96

Here there are three classes of workers grouped, the first being those whose earnings exceeded cost of living, the second those whose earnings and cost of living were equal, and the third those in which cost of living exceeded earnings. The first class numbers

1,598 workers with and 977 without dependents, the second 435 and 170 and the third 594 with and 130 without.

The second table presents the numbers of workers in the various ranges of surplus or deficit for 1889, 1888 and the six years 1884-9:

Range of surplus or deficit.	With dependents.			Without dependents			Total workers.		
	1889	1888	1884-9	1889	1888	1884-9	1889	1888	1884-9
Workers with surplus :	No.	No.	No.	No.	No.	No.	No.	No.	No.
$50 and under	769	533	487	351	231	272	1,120	764	759
$50 to $100	460	310	294	270	220	192	730	530	486
$100 to $150	194	149	151	167	123	125	361	272	276
$150 to $200	97	81	83	112	71	84	209	152	167
Over $200	78	67	88	77	60	83	155	127	171
Total	1,598	1,140	1,103	977	705	756	2,575	1,845	1,859
Workers who spend all they earn.	345	302	418	170	144	243	515	446	661
Workers with deficit :									
$50 and under	410	319	261	114	40	77	524	359	338
$50 to $100	114	68	87	12	3	15	126	71	102
$100 to $150	36	24	30	4	.....	2	40	24	32
Over $150	34	7	23	.....	.....	.....	34	7	23
Total	594	418	401	130	43	94	724	461	495
Total workers	2,537	1,860	1,922	1,277	892	1,093	3,814	2,752	3,015

In this table the surplus or deficit is shown for five ranges in each class, from $50 and under to over $200 ; whereas in the previous one it is shown for eleven ranges, from $10 and under to over $300. For the year 1889 workers with and without dependents whose earnings exceeded cost of living were 67 per cent. of the whole, as against 62 per cent. for the six years 1884-9 ; those whose earnings were equal to cost of living were 14 per cent. of the whole in 1889 as against 22 per cent. for the six years ; and those whose earnings were less than cost of living were 19 per cent. in 1889 as against 16 per cent. in the six years. Consequently the averages of 1889 are both better and worse than those of the six years.

Comparative Averages according to Surplus or Deficit.

In the following table a summary comparison of days employed, wages earned and cost of living is given by workers with and without dependents for 1889, 1888 and the six years 1884-9, classified according to surplus and deficit :

1st—With surplus. 2nd—Spend all they earn. 3rd—With deficit.	Workers with dependents.							Workers without dependents.				
	No.	Av. dep.	Days employed.	Total earnings.	Daily rate.	Cost of living		No.	Days employed.	Total earnings.	Daily rate.	Cost of living.
						Total.	Per capita					
	No.	No.	$ c.	$ c.	$ c.	$ c.		No.	$ c.	$ c.	
1889 1st	1,598	3.41	279.30	491 36	1 76	418 80	94 97	977	275.85	359 67	1 30	267 67
1889 2nd	345	3.99	261 44	405 66	1 55	405 66	81 29	170	265.51	207 64	78	207 64
1889 3rd	594	3.88	250.60	381 96	1 52	429 52	87 85	130	246.96	203 00	82	226 85
1888 1st	1,140	3.42	276.60	498 43	1 89	420 62	95 16	705	275.01	348 24	1 27	265 55
1888 2nd	302	3.76	260.75	425 87	1 63	425 87	89 47	144	275 11	228 44	83	228 44
1888 3rd	418	4.13	249.30	390 71	1 57	429 39	83 70	43	266.81	197 02	74	229 36
1884-9 1st	1,103	3.35	278 13	499 02	1 79	410 45	94 36	756	275.77	353 20	1 28	253 60
1884-9 2nd	418	3.75	263 08	405 81	1 54	405 81	85 44	243	270.51	216 60	80	216 60
1884-9 3rd	401	3.99	256.17	358 56	1 52	413 16	82 80	94	240.83	178 98	74	209 34

Here the time employed is that of regular occupation, while the total earnings include earnings from all sources. Hence the daily rate of earnings is in excess of the worker's daily wages from occupation.

Comparative and General Tables.—In the foregoing tables reference is made to returns received from not more than twenty-one places, owing to the fact that comparative statements were not available for a larger number in the years compared. In the general tables I to XII, beginning on page 79, full statistics are given for thirty-nine places canvassed for the year 1889, including statistics of working hours and weekly earnings in over 550 occupations and sub-occupations as derived from returns received from employers and employés. In no case has an average been given in which there has not been more than one return. In Table VII the averages of yearly statistics are given separately within the brace for workers with and without dependents in each occupation in which they are employed. This will indicate more clearly the relation between earnings and cost of living. A more approximate average for time employed and wages earned is given in Table VIII. The same information is given in further detail in Table IX. Here the averages are shown by localities from which not less than four returns have been received, and a valuable comparison is given for each occupation in which an annual average for the province is derived for a six years' period. Out of eighty occupations thus compared for males over 16, the weekly time is longer in thirty-nine in 1889 as compared with the average for the period; the days employed are greater in forty five and the wages from occupation higher in forty-six. Of the five occupations for females over 16, all show an increase in wages, and in three the working time and days employed are longer. In Table X a few occupations have been given by localities for the most important class of workers, viz., those with dependents. A wide diversity exists in the cost of living per capita, even in the same locality, much of which is due to variable number of dependents. It has been shown on page 56 that the cost per capita diminishes as the number of dependents increases.

THE DOMINION TRADES AND LABOR CONGRESS.

By Daniel J. O'Donoghue.

Bearing in mind the mission of the Ontario Bureau of Industries, as exemplified to some extent in the scope and sub-division of its work under several specific heads, and as to the general importance of each of which there appears to be little or no difference of opinion, a chapter will not be out of place on the trend of the teachings of labor organisations in Canada, as well as on the tendency and intent of the minds of the working classes of the Dominion as exemplified in their representative Trade and Labor Congresses, in so far, at least, as existing laws affect or contemplated legislation may influence their interests, while never losing sight of justice to the individual or the general welfare of the State. To perform this task without prejudice, the proceedings of the Dominion Trades and Labor Congress, which held its sixth, though not annually consecutive, annual session recently at Ottawa, are cited as authority, as well as a means of contrast and comparison with the Labor Congresses held in Canada in the years 1873, 1874, 1875, 1876 and 1877, and in 1883, 1886, 1887, 1888, 1889 and 1890.

When the marvellous changes of the past twenty or thirty years in old forms governing philosophy, science, mechanics and manual labor are considered, and when it is remembered that the causes which led to these changes are still latent and in full exercise, as well as each day becoming more and more diversified, no one will wonder or be surprised at being told that the "hewer of wood and drawer of water" of these years has reaped at least some advantage from the prevailing spirit. Apart from the experience of his daily labor, as opportunity offered he became a reader and, as a natural consequence, a thinker. Whether he always thought and acted wisely and well in his own interest is a debatable question. That he realised he could not compass his ends through his individual effort, however, is evidenced by the significant fact that he sought in organisation the advice, sympathy and material assistance of his fellow-work-

ingmen. Hence the increase in the numbers and membership of distinctive labor organisations, in constitution either international, national or merely local, and all with one predominating object in view, that of improving the intellectual, moral, political, social, and material status, not only of the membership of the respective organisations, but of a common humanity as well. That these various bodies have at times erred in judgment may be true, but so may it also be said of representative bodies of much greater pretensions. Many there are who, through lack of proper knowledge, really and honestly believe that gatherings of representative workingmen are conducted as if of a rabble, and with but little or no regard for decorum or the recognised rules of order usually governing deliberative bodies. That this opinion is grossly erroneous, may be testified by any person who has ever taken the trouble to spend an hour in attendance at any regular session of a Labor Congress in Canada. That injudicious language may sometimes have been uttered, or a spasm of personal ill-temper or rudeness indulged in, militates not against the deliberations, the conclusions, or the general good character of these bodies any more than such occurrences do in respect of religious, legislative or municipal bodies. In fact, those who have availed themselves of the means of comparison contend that in several respects these latter bodies could with decided advantage learn more than one good lesson from the former in the matter and manner of transacting business coming before them. Speaking broadly and impartially, the questions coming before the annual meetings of delegated representatives of organised labor—many of whom are personally strangers to each other, meeting face to face for the first time, and only with such knowledge of how meetings of such a character should be conducted as was gleaned or inculcated on the floors of the local bodies they represented for the first time at a congress—are debated in a gentlemanly manner, and in a spirit indicative of at least a fair conception of their tenor and possible value; while in many instances the several speakers display a critical as well as forensic ability which would do credit to the more pretentious legislatures and parliaments of Canada. Rarely indeed is it that the ruling of the chairman or presiding officer is appealed from at a labor congress—a circumstance alike creditable to the impartiality of that officer and the good sense of those over whom he presides.

Another fallacy, propagated most industriously by those who are opposed to or cannot succeed in using for their own ends the several aggregations of working men in this country, is, that political partisan feeling and interest are usually the covert springs upon which labor congresses are worked, rather than in the honest interest of those for whose benefit they were convened. Nothing is farther from the truth. That unscrupulous political partisans have found, and will time and again find, their way to and attempt the manipulation of such gatherings for party purposes, is a fact of which labor organisations are well aware. Yet it is worthy of note that the great majority on such occasions, with surprising astuteness, soon "measure up" these characters, and generally render futile their intrigues and schemes. The honest delegates, who as a rule constitute the largest number, rarely forget the cardinal objects of their mission, and their views and the views of their constituents are usually, in fact always, found crystallized in the series of resolutions adopted at each congress. This assertion is borne out by the statement that no important resolution adopted, no principle enunciated at any of these congresses, and stamped as part of the labor platform, has ever been authoritatively repudiated by any of the subordinate bodies. Neither should it be forgotten that despite the imputation of thoughtless radicalism, the organised labor element of Canada in its unity has always been conservative in the broadest and best sense of that term.

THE EARLIER TRADE CONGRESSES. — The first Canadian Labor Congress was convened in the city of Toronto on the 23rd September, 1873, at the instance and call of the then existing local Trades' Assembly of that city, and of which organisation the present Trades and Labor Council of Toronto is a counterpart. The aims, the anticipations and the reasons therefor of those who met in a representative

capacity on that occasion may be gleaned from the opening address of President J. W. Carter, of the Trades Assembly, who, in extending a warm welcome to the membership of the convention, said :

"You meet to-day to inaugurate one of the grandest events in connection with the labor movement that has ever taken place in the Dominion of Canada. Its significance may be gathered from the fact that from all the centres of industries in the provinces of Ontario and Quebec, the working classes have determined to centralize their energies to promote the adoption of those laws and regulations which must be established for the good and protection of the laborer. The time has come when questions affecting the interests of labor must be taken hold of and by the workingmen dealt with in a prompt and systematic manner, when the many problems touching the moral and social position of the masses must be solved. You meet here to speak as with the voice of one, what is your opinion of the great future of the workingman, both as to his connection with himself, his fellow and his country. It is true we have much to be thankful for in the past, still there is a far more important future before us, and this day, in this Dominion, the hearts of the working classes are filled with joyous expectation, and I venture to say that the result of your deliberations at this Congress shall tend to influence the great ruling powers and make them feel that your efforts, though apparently unimportant, are of a magnitude which cannot be overestimated. The future greatness of this country depends, to a very large extent, upon the identity of relationship between capital and labor, and I think I speak your sentiments and feelings when I say that you do not meet with a view of infusing a spirit of discontent and dissatisfaction ; you do not meet to create an agitation for supremacy or power, nor to create hostilities between capital and labor ; but you do meet for the purpose of disseminating the true principles of unionism, to foster a spirit of common brotherhood throughout the Dominion, to seek the promotion of those laws which shall make no distinction of man as man. . . . It occurs to me that we are planting a standard this day, the influence of which will be felt by the workingmen all their lives, and the mottoes inscribed on this unfurled banner shall be an incentive to generations yet to come. Workingmen are beginning to realise the fact that they are possessed of power—power to think, power to act—and with increased knowledge will come increased power. And the time is not far distant when the great men of the land will find it absolutely necessary to consult with the workingmen in the matter of legislation, both political and commercial. In conclusion, I urge upon you the necessity of being wise and moderate in your deliberations and enactments, and let those who are watching your movements at this, the first, Canadian Labor Congress be compelled to admit that we are honest, earnest and prudent workers."

The number of accredited delegates at this first Labor Congress was 44, and the principal subjects dealt with may be enumerated under the heads of legislation, organisation, the creation of a Labor Bureau, hours of labor, arbitration, assisted and imported cheap labor, prison labor, and a constitution.

The Congress of 1874 met in annual session in "No. 6 Committee Room, House of Parliament, Ottawa," on the 4th of August, in that year. This place of meeting on that occasion indicates that the great men of the land, alluded to in the President's address of the previous year, had already realised that workingmen were possessed of power to think and to act, and were in some degree at least acknowledging the fact. At this session the Labor Congress, besides discussing and elaborating the subjects dealt with in 1873, added the very vital questions of the Criminal Law Amendment Act, the Masters and Servants Act, and that respecting the application of the law of conspiracy, while the Congress of 1875 declared "that the electoral franchise should be so extended as to give a vote, both municipal and parliamentary, to every man of sound mind and unconvicted of crime, and not being a burden on the country."

The deliberations of the sessions of 1876-7 were, on the main, in respect of the questions receiving consideration at the annual meetings of the years previous. A reading of the discussions as published in the columns of the daily press of these years cannot fail to impress the conviction that, although the delegates were not the same persons on

each occasion, the tone was always in the same direction on almost every question dealt with. This demonstrates that the bodies represented had evidently devoted time and attention to their study, and always to an extent sufficient to enable their representatives to speak with intelligence and authority.

Through some unexplained reason no session of the Canadian Labor Congress was held, in accordance with its constitution, after that of 1877. As organised labor in the city of Toronto was ever first in all that pertained to the advancement of the labor movement in Canada, and as even its Trades Assembly had practically ceased to perform its functions, a laxity of duty in that quarter may to some extent account for the circumstance that no sessions of the Labor Congress were held from 1877 until 1883. That the great loss of such Congresses and their deliberations was felt in labor circles is demonstrated by developments subsequent to 1877.

In 1881 the labor organizations of Toronto joined hands and called into existence the now existing Trades and Labor Council of that city, and the prototype of many like organisations in the several cities of the Dominion. The year 1883 found the Toronto Trades and Labor Council considering the advisability of once again calling a Congress of representatives of labor bodies throughout the Dominion together, and the subject was referred to its Legislative Committee for futher consideration. This committee issued circulars to labor organisations throughout the land, asking an expression of opinion as to the necessity for or advisability of holding such a meeting. The answers being deemed very favorable, a Congress was summoned to meet in Toronto, commencing December 26 of that year, and in response to which call some forty seven delegates presented credentials. As indicative of the spirit governing those upon whose authority and advice this Congress was summoned, the circular calling the latter body together said:

"That the broadest scope may be allowed in the selection of questions for deliberation and action by the Congress, the committee have not deemed it advisable to lay down a programme for guidance, believing that the exigencies of the present time, coupled with past experience in most cases dearly bought, will readily suggest the questions which should, and most likely will, receive the prompt and unmistakable consideration which their gravity demands. . . . That the wisdom of bodies which, through any cause, may be unrepresented by delegates may not be lost to the Congress, it is requested that such bodies forward by resolution, such views as they may entertain on any particular phase of labor, or the tenor of any question which, in their judgment, may be worthy of discussion or action by the Congress. . . . It is to be hoped that all organisations will honor themselves in the ability and judgment of those whom they elect to represent them."

Mr. Charles March, President of Toronto Trades and Labor Council, being an accredited delegate, was chosen permanent chairman of the Congress of 1883, and in formally opening the first meeting he said:

"While I may find it somewhat difficult to define minutely the many reasons that urged the Toronto Trades' Council to call together representatives of labor in its various phases throughout the Dominion, yet I feel justified in saying that the disturbed condition of trade matters, coupled with strikes, always detrimental under any phase, occurring from time to time, and the apparent need for a much closer cementing of all classes of labor for common defence and protection, has been not a small factor in the determination. That the Council was not governed by narrow-mindedness in the premises is best evidenced by the call embracing not only trade unionists but also Knights of Labor. That this is right in principle I know you will agree, as between the two bodies antagonism should not, and, I am glad to find, does not exist, and between them no section or class of wage-earners need be without organisation and consequent protection. In the perfection of organisation lies education and a consequent raising of the masses to a thorough realisation of their own power under our present advanced system of government—although yet a system capable of many improvements."

Although there had been no Labor Congress between the years 1877 and 1883, it must not be inferred that education as to subjects more or less immediately affecting the interests of a class forming a very large percentage of the general community in Canada

had been neglected in the interim. On the contrary, it is found that at the Congress in 1883 the number of subjects submitted for deliberation and action, as compared with the number considered at previous meetings of that body, had increased in no small degree, nor were the questions added of any less importance than those which had received prior attention. An enumeration of some of these questions must challenge attention to the assertion that their scope carried them beyond the charge of being of a class character; they were of serious import to the good and welfare of a whole people. They stood in the order of business of the Congress as follows: Chinese immigration, shortening hours of labor, assisted European immigration, factory act, seamen's act, property qualifications (for municipal offices), manhood suffrage, the land question, the insolvency law, cumulative voting, extension of magistrates' powers respecting the wages of employés, land grants, tax exemptions, Government aid to colleges, organisation of female labor, pauper immigration, the temperance question, Torrens' system of land transfer, and direct labor representation in Parliament.

At the conclusion of its business the Congress of 1883 adjourned until such time as would be determined by the Toronto Trades and Labor Council, and which was not until September 14, 1886. At this Congress its organisation was made permanent, under the title of the Trades and Labor Congress of the Dominion of Canada, and it was determined that the body should meet annually at such place and time as determined on at each session. The Congress of 1887 was held in the city of Hamilton, while London was honored by its presence in 1888. At this Congress President March in opening the annual proceedings for the fourth time said:

"I respectfully desire to impress upon your body the desirability of carrying forward by resolution, although in reiteration, all such resolutions of past sessions of this Congress as have not been rendered unnecessary, so that time may demonstrate what has been aimed at and what has been accomplished in the series of years since the first Congress in 1873."

In 1889 the Congress held its sessions in the city of Montreal, being the first occasion on which this body met in the Province of Quebec. That the interests common to all who work for wages, rather than prejudice of race or section of a common country, governed in the selection of where each Congress be held may be best understood when it is pointed out that while Montreal was selected as the next place of annual meeting by those constituting the Congress held in London in 1888, there was not one delegate from the Province of Quebec in attendance at that convention. This intent was still further strengthened when as a first step at the Congress in Montreal a French assistant-secretary and translator was promptly as well as unanimously appointed—a step repeated at the meeting at Ottawa in September last. In his opening address to the Congress at Montreal, President J. T. Carey took occasion to outline his views on one or two questions in the following words:

"Anticipating, as I do, that each and every one of you, in your respective provinces, has been sufficiently interested to keep a close eye on all business of import to wage-earners introduced either in the Federal Parliament at Ottawa, or in the Provincial Legislatures, I do not deem it necessary to refer to such legislation in other than general terms. My experience and observation lead me to the conclusion that much that is required, whether in the passage of new laws or in the beneficial amendment of some already on the statute books, both Federal and Provincial, may and can be achieved through intelligent agitation and united perseverance on the part of organised labor throughout the Dominion. To secure the one and counsel the other in your respective localities, while always advising your constituents to avoid and at the same time carefully note the many side issues and crafty intrigues of those who would but use them for political party purposes or for personal preferment, I sincerely hope will be a prominent part of the good work of the present Congress. Looking to that laudable end I especially recommend that a change be made so that the executive committee of the Congress be composed of six persons, three from the Province of Ontario and three from the Province of Quebec, with the President of the Congress as chairman. By this arrangement, while acting as an executive committee for the Congress, each three referred to would also be empowered

to act as a sub-committee in supervising as well as promoting such legislation of a purely provincial character as may be outlined by this body or its executive, or which may be promoted or asked for by labor organisations within either or both provinces in the interim between the yearly meetings of the Congress."

This recommendation was, on motion, concurred in and became part of the constitution, while the President, who was also the chairman of the general executive committee, was subsequently deputed to proceed to Ottawa at the next session of the Dominion Parliament, with the design of furthering, through personal interview with the members of the Government and other members of the Senate and House of Commons, the introduction and passage into law of measures in justice or beneficial to the working people of the country. Within the last few years some day in the first week of September in each year has been chosen in more than one city of Canada for celebration as "Labor Day" by labor organisations. This celebration in Montreal in 1889 which was held on the 2nd of that month, was very imposing both as to the respectability and very large number of its participants, and was a very fitting prelude to the opening of the annual sessions of the Dominion Trades and Labor Congress on the next day. The demonstration on the 2nd was also honored by the presence of a Minister of the Federal Government walking on foot in the procession, the Premier of the Provincial Government, as well as several members of the House of Commons and of the Legislature of the Province of Quebec. It is further held by the promoters that these annual out-door demonstrations on the part of the organised bodies not only stimulate others to join, but that they tend to remove many erroneous ideas existing in the public mind as to the numbers and character of labor organisations.

The Session of 1890.—In the present year the Congress was summoned to meet at Ottawa on Tuesday, September 2nd. On the day previous the workingmen of that city held their demonstration, which was conceded by all as being one of the largest, most decorous and most creditable in every respect ever held by any body of people in that city, and one that was attended by the city's parliamentary representatives, the mayor and members of the municipal corporation in carriages, and the city fire brigade, as well as by such delegates as had arrived from other sections of the Dominion to attend the Labor Congress, and who were also provided with carriages through the thoughtfulness and courtesy of the reception committee of the local Trades and Labor Council.

At ten o'clock on the morning of September 2, the Dominion Trades and Labor Congress was called to order in the city council chamber, at Ottawa, by Mr. J. W. Patterson, President of the Trades and Labor Council of that city, who opened the proceedings by introducing Mayor Erratt.

The mayor, in tendering the members of the Congress a hearty and earnest welcome to the capital, said he hoped their stay in Ottawa would be both pleasant and profitable. "I am delighted," he said, "to have witnessed the grand celebration by which Labor Day was observed. It was the first celebration managed exclusively by workingmen in this city. I never remember seeing so large or so well ordered a parade in Ottawa before. It was a most respectable and creditable turnout."

As significant of the constantly increasing importance of this Congress in the eyes of workingmen of the Dominion, it may be pointed out that while there were only forty-four delegates—all from places in the province of Ontario—in attendance at the first Congress held in 1873, there were no less than ninety credentials presented at the Congress at Ottawa in 1890, and these embraced representatives of labor bodies in the area covered by the provinces of Quebec, Ontario and British Columbia. The revenue for the carrying on of the business of the Congress is wholly derived from an annual 8-cents per capita assessment on the membership of all bodies represented at the last Congress, and all others who signified their willingness to affiliate, the same being due and payable in two instalments on the 15th November and May respectively.

The annual report of the secretary-treasurer of the Congress says that "the revenue from this source has been sufficient to meet all expenditure connected with the Congress" during the year ending August 31st, 1890. The receipts amounted to the sum of $479.67,

and disbursements $477.76. The balance of $1.91 added to the sum of $82.26 on hand at the previous audit left the body in possession of $84.37 on September 2. The report states also that besides the forty-seven organisations represented at the Congress of the previous year eighteen other bodies paid the per capita assessment during the then past year, and which, in his opinion, was a gratifying increase in one year. An examination of the details of the expenditure of $477.76 during the year shows that the cost of printing (including the report of the proceedings of the Congress), postage and stationery was $147.96, secretary's salary $30, expenses of executive committee (railway fares to and from Ottawa and expenses) $97.10; president's expenses in full as representative at Ottawa during a period of some four months, $178; while all miscellaneous items were included in the sum of $24.70. Under such circumstances it is not surprising to find the audit committee of the Congress saying: "We find it our pleasant duty to add to this report that the expenditure has been most commendable in point of strict economy," and that, in conclusion, "we would earnestly recommend that $20 per annum be added to the secretary-treasurer's salary, which would still not be commensurate with the work imposed upon him." These figures should also, in all fairness, stand as a refutation, if such be necessary at all, of the charge so often made that those persons usually recognised as prominent in matters of labor reform live extravagantly and in luxury at the expense of those whom they seek to serve and benefit.

The President's Address.—President J. T. Carey in delivering his annual address to the Congress spoke in the following language: "As President of the Dominion Trades and Labor Congress it is my very pleasing duty on this occasion to extend to you, individually and collectively, a warm welcome to the performance of your very important duties as representatives of organised labor—the representatives, in fact, of all who, in this Dominion, have to seek and obtain a livelihood through wages for labor done—as well as to the serious consideration of the several questions affecting vitally the interests and welfare of that class of Canada's population, which may come before you for action. To this work I feel satisfied you will devote your full and undivided energies as well as experienced minds. The present appears to me a fitting occasion to draw your attention to the fact that this is not the first time in the history of the labor movement that a meeting of this representative character has taken place at this the capital of Canada. As far back as 1874, sixteen years ago, the second annual session of the Canadian Labor Union was held at Ottawa. At that memorable session the then president, Mr. J. W. Carter, delivered an able and well-considered address, and I will offer no apology in adopting some of his language and sentiments in addressing you at the present time. With him I say there are two reasons why I regard this convention with particular interest and as of great importance. First, I regard it as a significant fact that labor representatives of the Dominion should meet at Ottawa on this, the second occasion, as it is here where the great men of the Dominion profess to legislate for the people of this whole country. It is at Ottawa the laws governing the Dominion are made, and it is but appropriate that the workingmen of Canada, through their representatives, should once again meet in the city of Ottawa to give expression in no uncertain sound on questions affecting their particular interests, as well as upon such subjects of general interest to the whole people as they may deem advisable to pass upon. The second reason why I regard this meeting of importance is on account of the grave questions which will come before you for consideration, chief among which will be those of the present very unsatisfactory condition of the criminal law as to conspiracy on the part of those belonging to labor organisations, the status of labor organisations before the law, and the increased expenditure for immigration. If ever there was a time when calm and sober thought and sound reasoning were required it is the present. If ever there was a time when the opinions and judgment of workingmen should be especially made known, it is to-day. Such, in effect, were the words of President Carter in 1872, and I repeat his words with all the force begotten of experience of workingmen in all the years since that time. The truth of my assertion will be made very evident during this session to every reflecting mind. I cannot too strongly impress on the minds of the delegates to the present Congress the advantage as well as the necessity of having an accredited representative of your Congress at the seat of Government during the several sessions of Parliament to

forward such laws as may be introduced, as well as to impress upon and represent to the Government such legislation as may be of pressing importance to the working classes.

"I desire also to add my testimony to the wisdom of having, at last year's Congress, elected an executive of six, three from each of the provinces of Quebec and Ontario, and through which provision, while acting as an executive body for the Congress as a whole, each three was empowered to act as a sub-committee in representing as well as promoting labor legislation in the respective provinces. This is amply illustrated in the value of the reports which these sub-committees present to this Congress of their labors, and which reports I feel in duty bound to assert, of my personal knowledge, do not do full justice in detail to the efforts of those constituting those sub-committees.

"As the report of the general executive board of the Congress, which has already been placed in your hands, details the work done or sought to be accomplished, as well as indicates in general what is urgently required in the shape of specific legislation, both federal and provincial, I need not trespass to any considerable extent upon your necessarily limited time at this early stage of the proceedings."

Report of the Executive Committee.—Following in due order came the annual report of the executive committee of the Congress. It is valuable in this instance as it furnishes a key to the manner in which the views of the representative body are sought to be given effect to in the interim between sessions. The document is as follows:

"Your Executive Committee beg to submit herewith for your information the following report:

"Previous to the meeting of the Dominion Parliament, blank forms of petitions were prepared and forwarded to all organisations in the Dominion for signature, praying for the enactment of certain laws or amendments to existing laws, and your committee are pleased to be able to report that very large numbers were presented to the House of Commons in due time. Petitions were also signed and presented to the Legislatures of the Provinces of Quebec and Ontario by the organisations in those provinces.

"Your committee also prepared and forwarded to His Excellency the Governor-General-in-Council, memorials respecting the various matters specially referred to them at the last session of Congress.

"The only general meeting of your committee during the year, owing to the great distance and heavy expense, was held in Ottawa on February 15th, there being present Messrs. Carey, Lafontaine, Dower, Jobin, Brennan, Gibson, March and Crozier. The committee waited on the Hon. Sir John Thompson, Minister of Justice; Hon. Mr. Tupper, Minister of Marine; Hon. Mr. Costigan, Minister of Inland Revenue, and Hon. Mr. Bowell, Minister of Customs, and laid before them various matters pertaining to their respective departments affecting the interests of the wage-earners of the Dominion. It was decided to instruct Mr. Carey to remain in Ottawa and represent the interests of the Congress during the session. The following is Mr. Carey's report:

"'In presenting this report I need hardly remind you that it is not intended to enter into detail as to all the work which was necessary and performed in furtherance of the objects in which we, as repreeutatives of organised labor throughout Canada, were specially interested. With the design, however, of giving some idea of what had been performed in that behalf, I may be permitted to say that, according to instructions, I attended at Ottawa during the last session of Parliament. Early in the session a meeting of your executive was held at the capital, and immediataly after I placed myself in communication with members of Parliament, and solicited their support for measures that had been or were likely to be introduced during that session in the interests of labor. I am glad to say such support was, in most instances, cheerfully promised. Several bills were introduced during the session by private members, and which, had they become law, would have been very beneficial to the working classes. In every instance I sought to secure copies of these as soon after their introduction as possible, and when successful, I at once forwarded copies to the secretaries of the several labor organisations throughout the country. When I could not get these copies I forwarded the

titles of measures introduced, so as to give an idea of the character of the bills pending. When sending such bills or titles of bills, I invariably requested that they be laid before the organisations for consideration, and if approved of to pass resolutions and forward them to the respective members of Parliament for the constituencies in which the bodies were located. I was not disappointed, for in a short time after these resolutions began to pour in from all parts of the country, praying for the passage into law of those measures. I am pleased in being able to state that these resolutions had a beneficial effect upon some, at least, of the members of the House, as, apparently, up to that time some of them were not aware of the existence even of a labor organisation in the constituencies they represented.'

"Hon. Sir John Thompson, Minister of Justice, introduced (according to promise of the previous session) an amendment to the Criminal Law Amendment Act, with the object of providing better legal protection for the members of labor organizations, and which amendment was in the words following:

"'2. No prosecution shall be maintainable against any member of a trade combination for conspiracy to do any act or cause any act to be done, or to neglect, or refuse, or omit to do any act, or to cause or procure the neglect, refusal or omission to do any act, unless such act, or such neglect, refusal or omission, as the case may be, is an offence punishable by law.'

"On the request of your committee the honorable gentleman promoting the Bill substituted the word "statute," instead of the word "law," as the last word of the section just quoted.

"Hon. Mr. Colby introduced a bill entitled, 'An Act to amend the Seamen's Act,' chap. 74 of the Revised Statutes of Canada. This Bill provided as follows:

"61. Section 118 of the 'Seamen's Act,' chap. 74 R.S., is hereby amended by striking out the following words in the fourth and fifth lines thereof: 'or be removed by *certiorari* or otherwise into any of Her Majesty's superior courts of record.'

"The foregoing amendment, while applicable in the provinces of Quebec, Nova Scotia, New Brunswick, Prince Edward Island, and British Columbia, does not apply as to Ontario, as was petitioned for. Neither does it secure to seamen the right of appeal. The Act applicable to Ontario is chapter 75, R. S., section 14, and is not affected by the amendment just referred to above.

"Mr. Taylor introduced a Bill entitled, 'An Act to prohibit the importation and migration of foreigners and aliens under contract or agreement to preform labor in Canada.' This Bill received the hearty support of almost every labor body in Canada. After proceeding some stages in the House, it was referred to a select committee, with power to take evidence in relation thereto, and with instructions to report thereon. A copy of the Bill, together with the evidence taken before the select committee, the recommendation of that committee in relation thereto, and the action of the House with regard to the Bill, is submitted herewith.

"Hon. Mr. Chapleau introduced an Act providing for the collection and publication of labor statistics, copies of which I was unable to procure until some four days previous to that of the second and third readings. On that day I sought and obtained an interview with Hon. Mr. Chapleau, and requested that this bill be amended so as to make it more beneficial to those most interested. Not receiving a satisfactory answer from the hon. Minister, I asked Dr. J. H. Wilson, of East Elgin, to offer the required amendments, which he kindly consented to do. Most of the amendments suggested by Mr. Wilson were ultimately accepted by the promoter of the measure before it was passed into law. A copy of the Bill and amendments are also submitted herewith.

"Mr. Purcell introduced a Bill for the protection of persons employed by contractors and others in the construction of railways, etc. This Bill was also referred to a committee, and was not heard of again in the House.

"Mr. H. H. Cook's Bill, to provide for the examination of persons running stationary engines, boilers etc., was not brought up in the House for a second reading. Another Bill by the same gentleman, *re* civil service employment, caused quite a debate at its second reading. The Bill, however, was ultimately withdrawn.

"Mr. N. Clarke Wallace's Bill, amending the Anti-Combines Act, passed the House as he introduced it, but it failed to secure the assent of the Senate after it had been twice considered by a committee of the latter body. As a consequence the law remains as enacted in 1889.

"During the visit to Ottawa of Bros. March, Jobin and Brennan, of your Executive Board, we secured an interview with the following members of the Government, namely, Right Hon. Sir John A. Macdonald, Hon. Sir John Thompson, and Hon. Messrs. Carling and Tupper, and impressed upon them the justice of totally discontinuing the granting of assisted passages; that if there was need of assisting people to the North-west preference should be given to our own citizens, with assistance enough to start them in farming; of amending the Anti-Combines Act so as to leave out all reference to labor organisations; of substituting the word 'statute' for 'law,' in the amendment to the Criminal Law; of appointing inspectors to carry out the provisions of the safety of ships law; and the enactment of a law compelling vessels, either loading or unloading, to have proper tackle and gear to secure people engaged in that class of work from accident.

"At the request and on the suggession of your Executive Committee, who were accompanied by Bro. George Warren, of the cigarmakers' union of Montreal, Hon. Mr. Costigan introduced and had passed into law an Act providing for the destruction of cigar boxes when empty. This very necessary and just measure protects, to a great extent, both the members of the cigarmakers' union and the public generally against the packing of inferior cigars in the boxes which had previously contained only first-class cigars.

"Your committee also interviewed Hon. Mr. Carling, Minister of Agriculture and Immigration, and warmly protested against the granting of assisted passages to immigrants from abroad, be they adults or children."

Legislative Committee's Report.—The following report was presented by the Legislative Committee of the Province of Quebec:

"Your Executive for the Province of Quebec beg leave to report that of the several resolutions adopted at the last session of your body, they deemed it expedient to select five with the design of pressing them upon the attention of the Provincial Government and Legislature, and if possible have them enacted into law. These measures were: An Employers' Liability Act, a Mechanics and Laborers' Lien Act, providing for the appointment of a public prosecutor or prosecutors, the amendment of the present jury law so as to provide that the per diem allowance to jurymen should be $2, and the alteration of the law so as to limit the power of calling out the militia to the Lieutenant-Governor and the mayors of the municipalities in cases of riot. In accordance with this resolve, your committee sought and were accorded an interview with the Premier and his Government. This interview took place in the court house, in the city of Montreal, on November 6th of last year, and at which every member of your committee was present. On that occasion a formal request was made for the enactment into law of the measures first recited, and which request was supported by your representatives to the best of their ability. The government would not commit itself to any definite promise, but asked that we submit what we required in writing at as early a date as possible. This was done, and duly acknowledged. Besides this, no less than 215 petitions, from 43 different labor organisations, were duly prepared and were presented on the floor of the Legislature praying for the legislation referred to. Despite these efforts there was no practical result, except in respect of the payment of jurors. In the latter case the law was amended so as to allow one dollar per day to jurors residing in cities, and one dollar and fifty cents when they are drawn from other municipalities for service in cities, being an increase of fifty cents per day all round. A clause was also embodied which places the pay of witnesses on the same basis. Besides, the following measures of interest to workingmen were enacted:

"An Act to amend Act 556 of the Code of Civil Procedure, respecting the seizure of household goods; amending Act 3026 of the Revised Statutes of Quebec relating to employés in manufactories; amending the law relating to the protection of employés in manufactories; and an Act relating to the protection of persons employed in the construction of railways authorised by an Act of the Legislature of Quebec.

"Your committee, though not as successful as they desired, are yet hopeful of better results in the near future, if advantage is but taken of the experience of the past year. They recommend, therefore, that their successors energetically continue the good work thus inaugurated until the just demands of organised labor in the province of Quebec are complied with in respect of legislation.

"Your committee, while drawing attention to the fact that the government, at the instance of organised labor, established free night schools in the cities of Montreal and Quebec, desire also to report that organised labor achieved a triumph in the election to the Provincial Legislature of a *bona fide* labor representative in Division No. 1 of the city of Montreal, in the person of Mr. Joseph Beland, President of Montreal Trades' and Labor Council, and a bricklayer by trade.

"Your committee, in concluding, desire to indicate that they aided, to the utmost of their power, in the distribution and forwarding of petitions to the Federal Parliament praying for certain legislation in that body, and were ever ready at the call of our worthy and energetic president, Mr. J. T. Carey, in promoting every measure to that end."

The report presented by the Legislative Committee of the province of Ontario was as follows :

"The sub-committee of your executive, whose special duty it was during the past year to promote as well as watch legislation in the interest of labor in the Provincial Legislature of Ontario, beg leave to report as follows :

"We find that since 1872, when organised labor in Ontario—in fact in Canada—first began to figure as a factor in the domain of practical politics, of the many acts of the Legislature of this Province passed into law since that date, no less than thirty-nine or forty of them have been of more or less direct interest and importance to the wage-earners of the province. Among these may be mentioned the following as worthy of special enumeration :

"1873—An Act to Facilitate Agreements between Masters and Workmen for Participation in profits.

The Trades' Arbitration Act. This law was intended to facilitate the settlement of disputes between employers and employés.

An Act to establish Liens in Favor of Mechanics, Machinists, and others.

"1874—An Act to amend the Law relating to the Attachment of Debts, as respects the Wages and Salaries of Mechanics and others. This Act exempts from garnishee wages up to and including $25, except in cases of debt for board or lodging.

An Act respecting Industrial Schools. This Act makes provision for the reclamation and care of children found begging, receiving alms, wandering about without settled homes or proper guardians, found destitute, neglected by parents or guardians, etc.

"1878—An Act to amend the Mechanics' Lien Act. The preamble to this Act recites that whereas, it is desirable to afford greater protection to the earnings of the working mechanics, laborers and suppliers of materials than is now provided by law, Her Majesty enacts, etc.

"1880—An Act to protect the Goods of Lodgers and Boarders against Distresses for Rent due Superior Landlord.

An Act respecting Municipal Assessments and Exemptions. Clause 4 of this Act provides that the deduction of $400 from the income of a person having an income exceeding that amount shall not be made in case such income exceeds $1,000.

"1881—An Act to make provision for the Safety of Railway Employés and the Public. The preamble recites that, whereas frequent accidents to railway servants and others are occasioned by the neglect of railway companies to provide a fair and reasonable measure of protection against their occurrence, as to frogs, wing-rails, guard rails, freight cars, etc., provisions are made to remedy. It is also

provided that every highway or other overhead bridge, or other erection or structure over any railway . . . . must have 'an open and clear headway of not less than seven feet over the top of the highest freight car.'

An Act to amend the law securing to wives and children the benefit of Assurance on the lives of their husbands and parents.

"1882—An Act to establish a Bureau of Industries. This department effects much good in collecting and giving very valuable and reliable information as to the supply of labor, rates of wages prevailing, etc., in Ontario.

An Act to make further provision respecting the Lien of Mechanics and Laborers.

An Act to provide for the establishment of Free Libraries. This Act provides that on petition to council, signed by not less than 100 electors in a city; not less than 60 in a town, and not less than 30 in an incorporated village, the council may pass a by-law giving effect to the prayer thereof as to the establishment of a Free Library.

"1884—An Act to amend the Mechanics' Lien Act, and still further improving that important measure.

An Act to Secure to Wives and Children the benefit of Life Insurance.

An Act to Extend the provisions of the Revised Statute respecting Master and Servant. Under the provisions of this Act proceedings may be taken within one month after the engagement or employment has ceased, or within one month after the Act became law. The various provisions of this Act as well as its benefits are so well known and admitted now that an enumeration thereof is not necessary here.

"1885—An Act respecting Wages. This Act provides that in cases of assignment of any real or personal property for the benefit of creditors, the assignee shall pay *in priority* to the claims of the ordinary or general creditors of the person making the same, *the wages or salary* of all persons in the employment, or within one month before the making thereof, not exceeding three months' wages or salary, and such persons shall be entitled to rank as ordinary or general creditors for the residue, if any, of their claims. A like provision is made to apply to the distribution of the assets of a company in liquidation under the Joint Stock Companies' Winding Up Act, as well as to the settlement of claims under the Creditors' Relief Act. The provision of the Act respecting wages, just quoted, *applies to all wage earners*—whether by the day, the week, the month, or the piece.

An Act to amend the laws relating to the Franchise, and the Representation of the people. This Act conferred the right of franchise on wage-earners who earned $250 annually, and part of this may be in the form of board and lodging.

"1886—An Act to amend the Franchise and Representation Act, 1885. Through this amendment any voter entitled to vote within a city or town shall, on the day of polling, for the purpose of voting, be entitled to absent himself from any service or employment in which he is engaged or employed, from the hour of noon in the day time until the hour of two of the clock next thereafter, and such voter shall not, because of absenting himself, be liable to any penalty, or suffer or incur any reduction from the wages or compensation to which but for such absence he would have been entitled, etc.

An Act to amend the Revised Statutes respecting Master and Servant still further improves that law in favor of the servant. It contains a provision that 'any agreement or bargain, verbal or written, expressed or implied, which may hereafter be made between any person and any other person not a resident of Canada, for the performance of labor or service, or having reference to the performance of labor or service by such other person in the province of Ontario, and made as aforesaid, previous to the migration or coming into Canada of such other person whose labor or service is contracted for, shall be void and of no effect as against the person so migrating or coming.'

An Act to secure compensation to workmen in certain cases.

" 1887—An Act to amend the Mechanics' Lien Act, by adding to section 6 of the Act the following words: 'but such lien during the said periods shall have the same priority for all purposes before as after registration.'

An Act to amend the Workmen's Compensation for Injuries Act, by omitting therefrom the words: 'lapse of one year from and after the commencement thereof' and inserting instead the words, 'first day of April in the year one thousand eight hundred and eighty-eight.' By the insertion of the words just quoted the law was made to apply to the Grand Trunk Railway, which was exempt under the Act prior to 1886 so as to enable the employés of that company to make answer to a series of questions propounded by a committee of the Legislature as to the value to them of the insurance system in connection with that railway. This amendment also extends the provisions of the Act of 1886 so as to apply to other employés than those being members of the G. T. R. insurance association.

An Act respecting Distress for Rent and Taxes. This Act exempts from seizure goods and chattels exempt from seizure or distress by a landlord, except as provided therein.

An Act relating to Exemptions from Seizure under Execution, by which wearing apparel, certain household effects and necessaries, etc., are exempt from seizure and sale under all circumstances.

Revised Statutes of Ontario, chap. 193.—Exemptions from Taxation: 'The annual income of any person derived from his personal earnings, provided the same does not exceed $700; the annual income of any person to the amount of $400, provided the same does not exceed $1,000. Any person entered on the roll as a wage-earner shall be entitled to the exemption provided for in this sub-section in respect of earnings or income.'

" 1888—An Act to establish Manhood Suffrage for the Legislative Assembly.

An Act to regulate the Closing of Shops and the Hours of Labor therein for Children and Young Persons.

An Act to amend the Free Libraries Act, by adding to sub-section 2 thereof the following words: 'There may also be established evening classes for artisans, mechanics, and workingmen in such subjects as may promote a knowledge of the mechanical and manufacturing arts.'

" 1889—An Act to amend the Ontario Factories Act. This amendment applies the law where *five* (instead of twenty) or more persons are employed.

An Act to amend the Ontario Shops Regulations Act, and extending its provisions.

An Act for the Enforcement of Orders under the Act respecting Master and Servant. Under this Act where a person secures a judgment for wages before a police magistrate, the latter has the like power and authority to enforce the payment thereof as are possessed by a division court judge in like cases.

An Act to amend the Workmen's Compensation for Injuries Act, as experience warranted, and in the direction contemplated by the Act in the first instance.

" 1890—An Act respecting Mining Regulations. This measure is applicable to all mines employing six or more persons, and PROHIBITS the employment of any boy under 15 years of age in a mine under ground. It also provides that no girl or woman shall be employed at mining work, or for such a purpose in or about a mine. Neither shall any boy of 15 or under 17 years of age work in any mine underground more than 8 hours a day, or more than 48 hours in any one week.

An Act to simplify the Procedure for Enforcing Mechanics' Liens. This law provides that, instead of taking a case into the ordinary courts, a workingman may file a statement of claim in the office of a Master or Official Referee having jurisdiction, who is empowered as a judge in such cases, and as a consequence of which privilege large law costs are avoided, and where a plaintiff may plead and be heard on his own behalf.

An Act to amend the Mechanics' Lien Act, making still further beneficial changes and additions to the law respecting Mechanics and Laborers' Liens.

An Act to amend the Trades Arbitration Act, so that "masters and workmen making the agreement or memorandum mentioned in section 3 of this Act may by such memorandum or agreement authorise the said Board *to establish a rate of wages* or price of labor or workmanship at which the workmen shall in future be paid."

"In so far as the legislation of the session of 1890 is especially concerned, your committee desire to bear testimony to the unvarying courtesy accorded them by Hon. Attorney-General Mowat, as well as by such of his colleagues in the Government upon whom it was incumbent to wait at any time in reference to needed legislation or for the purpose of offering suggestions as to measures pending during that session. We are much pleased in being able to report, also, that the Government, in most instances, recognising the justice of our suggestions, embodied them in Government measures.

"While this is true, however, yet very much remains to be done, first in seeking that legislation affecting the working-classes should, as nearly as purely local circumstances will permit, be alike in all the provinces of the Dominion; and, secondly, in agitating in the direction of securing such further legislation as, while not to the detriment of the general interests of the country, will still further improve the conditions surrounding and governing the toilers of the Dominion.

"We desire also to draw attention to the fact that steps should be taken, either by the Congress itself or by provincial or local labor organisations, to provide funds with which to carry into court, when deemed expedient or necessary, and prosecute to judgment such infractions of existing laws as occur, as well as appealing to higher courts in cases where it appears that justice requires such action, when those aggrieved are not in a position, financially, to take the requisite steps in that behalf. In this connection it is but just to record that the Attorney-General of Ontario, at the request and on the application of organised labor, has, in more than one instance, taken steps to sustain the letter and intent of the law respecting cases of the nature referred to.

"Your sub-committee desire to record their appreciation of the unvarying attention paid by Capt. Wm. Garson, M. P. P. for the county of Lincoln, in the last Legislature of this province, to all matters affecting the interests of working people which came before that body during its existence. His services were ever at the disposal of your representatives, and were of unquestionably great value on many occasions.

"Your Executive Committee would, in conclusion, beg to return thanks to the members of the House of Commons Printing Committee, and particularly to the Hon. Mackenzie Bowell, for kindness in furnishing your committee with copies of all public documents, as well as the printed proceedings of the House of Commons and Senate.

"All of which is respectfully submitted."

(Signed) J. T. Carey, *Chairman.* Louis Z. Boudreau.
Urbain Lafontaine. Chas. March.
P. J. Jobin. David R. Gibson.
M. H. Brennan. Jos. T. Crozier.
Geo. W. Dower, *Secretary.*

Chinese Immigration.—As the question of Chinese immigration into Canada and its effect upon the labor market, as well as its disastrous influence upon the moral and physical condition of those with whom the Chinese mingle, has become a matter of public interest, it will not be amiss to submit the following document, addressed to the Congress, as an embodiment of the views of organised labor in British Columbia in respect thereof:

"Victoria, B.C., Aug. 25th, 1890.

"Gentlemen,—At the last meeting of the Victoria Trades' Assembly I was instructed to convey to you the regret which the Assembly feels at not being represented in your Congress, and also to pledge our best wishes that the fruit of your deliberations may be equal to your desires.

It was also thought that it would be well to draw your attention to the great additions which have recently been made to Canada's already too large Chinese population. This influx, of course, can in a great measure be attributed to the exclusion laws recently adopted by the United States, but at the same time it is evident that British Columbia capitalists encourage Chinese immigration, to the great detriment of dignified white labor. The channels through which white men should derive subsistence are being gradually but surely choked by the Chinese, and their influence on the labor market is evident in every direction. Their influence on the morals of the young white population is another phase of the question which should not be permitted to escape unnoticed. Thousands of young men on the Pacific Coast, who are now wrecks physically and mentally, can lay their ruin to the Chinese, who taught them the terrible habit of opium smoking. The practice has become so common as to cease to be a matter of wonder or horror. Surely the Dominion Government is not so dead to the future of Canada as to allow these things to continue. Legislation as exclusive as that adopted by the Australian colonies would have the desired effect. Just so soon as the trouble now existing in the Wellington collieries is brought to a termination the Victoria Trades' Assembly proposes to take the Chinese question up with a view of inducing legislation on that subject, for it is only in legislation that the rights of white labor will be preserved. The feeling among Victoria organised laboring men is strongly in favor of a restricted immigration law made applicable to all countries. This, they believe, would be only a just recognition of the rights of Canada's working classes. . . . . I am, gentlemen, yours respectfully,

" David M. Carley, *Sec. V. T. A.*"

Resolutions of the Convention.—The number of resolutions dealt with at the Congress of 1889, was forty-seven, while those dealt with at the Congress at Ottawa, reached the number of sixty-two. Chief among these may be enumerated resolutions in favor of compulsory education ; increased grants to public schools ; granting Canadian citizens free lands within reasonable distance of railways, and the advancement of sufficient money, at low interest on sufficient security, to enable them to exist thereon for one year ; promoting and encouraging temperance ; manhood suffrage in municipal elections ; the abolition of property qualification for municipal offices ; election day being declared a half-holiday ; a Sunday observance law; an alien labor law applicable to all outside of Canada ; compulsory arbitration in labor disputes ; the taxation of public lands ; free school books ; payment of wages weekly and in cash ; eight hours to a day's work on Government works ; the extension of the Factory Act and the appointment of additional inspectors, including female inspectors ; Labor Day being declared a national holiday ; repeal of the clause in the Seamen's Act not allowing appeal after a conviction for any offence under that Act, and the insertion, instead, of a clause granting the right of appeal in such cases ; the abolition of tolls on turnpike-roads, the election of the Governor-General by the people ; the abolition of the contract system in connection with national, provincial and municipal works ; inspection of gear and teagle for loading and unloading steam and sailing vessels in all the ports of the Dominion ; permitting the assessment of all improvements on land at only fifty per cent. of their value ; a clause in all specifications for public work, whether federal, provincial or municipal, providing for the payment of wages then current where the work has to be performed ; compelling all steam and sailing vessels to carry competent crews, and to have their hulls and rigging properly inspected by competent inspectors ; calling upon the Dominion Government to take steps immediately to determine the question of jurisdiction, as between the federal and provincial authority, in the matter of factory, workshop and like legislation, and the preparation of a case or cases for submission to the highest legal authority for judgment, or in such other manner as shall be deemed most satisfactory ; the ownership and operation of all railways, telegraphs and telephones by the Federal Government ; protesting against the increased Dominion appropriation for immigration and the importation of paupers, indigents, orphan children and children of criminal or diseased tendencies ; against the reissue of charters to private banks, and demanding that all money be issued by the Govern-

ment direct: against the introduction of manual training in the public schools; against allowing Government employés to work for private firms or individuals; and praying for an amendment of the Anti-Combines Act, so as to exempt trade organisations and their membership from the operation of that law.

Census Statistics.—Independently of the foregoing summary enumeration of subjects dealt with, the following report from the committee on census statistics was unanimously concurred in.

We, your committee appointed to consider a resolution presented by Delegate Hastings, relative to questions to be asked in taking the census, beg to recommend the adoption of the same, and that the Dominion Government be requested to so instruct their officials that the following questions be included in the schedule:

(1) If working, how many days unemployed during the year?

(2) If attending school, how many school days absent during census year?

(3) Whether able to read?

(4) Whether able to write?

(5) Whether able to speak English?

(6) Whether a prisoner, a convict, a homeless child or a pauper?

(7) Is the home hired, or is it owned by the head or a member of the family?

(8) If owned by the head or a member of the family, is the house free from mortgage encumbrances?

(9) If the head of the family is a farmer, is the farm which he cultivates hired, or is it owned by him or by a member of the family?

(10) If owned by the head or a member of the family, is the farm free from mortgage encumbrance?

(11) If the home or farm is owned by the head or a member of the family and mortgaged, give the post-office address of the mortgagee?

(11*a*) What is the acreage of the farm?

(12) Regarding manufactures the following points:

(*a*) Date when established.

(*b*) Class of manufacture.

(*c*) Capital invested, and whether owned or borrowed.

(*d*) Value of plant, subdivided into [1] land, [2] buildings, [3] machinery, [4] raw material, [5] stock in process, [6] finished product made up.

(*e*) Amount and value of annual product.

(*f*) Amount paid for [1] rents, power and heat, [2] taxes, [3] insurance, [4] repairs, [5] commissions and expenses of sales department, [6] interest on cash used, and [7] all sundries not included in the foregoing.

(*g*) Labor and wages: [1] employés, whether operatives, engineers, or other skilled workmen, overseers, foremen, superintendents, officers, clerks, salesmen, watchmen, laborers, teamsters or unskilled workmen; [2] whether employed as piece hands or on salary or wages; [3] how paid, and whether weekly, fortnightly or monthly; [4] if paid by piece, at what rate; [5] if paid a salary, give rate of wages paid and average number of hands employed at each rate—whether under $5 per week, over $5 and under $6, over $6 and under $7, over $7 and under $8, over $8 and under $9, over $9 and under $10, over $10 and under $12, over $12 and under $15, over $15 and under $20, over $20 and under $25, over $25; [6] whether male or female, and whether under or over 16 years of age.

(*h*) Number of working days in operation, number of hours in the ordinary working day, and whether on full or on part time, in detail.

(*i*) Generally such other information regarding manufacturers as will be of value to the laboring classes.

(13) Regarding agriculture, the following points:

(*a*) Amount paid for wages, including estimate for value of board during census year.

(*b*) Weeks of hired labor upon farm, whether male or female; whether parties hired are married or single, and if they are provided with a house apart from home of employer.

General Remarks.—When the very large number of subjects dealt with at this Congress are considered, the conviction is at once reached by a casual reader that delegates could not, in the very short time of four days, clearly understand the full import and consequence of these resolutions, or discuss them on their merits. But it must not be forgotten that the subject matter of every one of these same resolutions has, perchance, been thoroughly reasoned out in argument before subordinate bodies long before being submitted to the Congress for its judgment. The character of the discussion in every instance justified this inference. While opinions may differ widely as to the wisdom on the part of such bodies of attempting to compass the wide grounds covered by their platforms, no unprejudiced person will deny the general excellence of their aims or the patience and perseverance evinced in their pursuit, and often under very adverse circumstances, when the opposite elements are taken into account.

Whatever may result from the future deliberations and determination of labor bodies, as outlined in the proceedings of their representative annual congress, it will not be gainsayed that President Carter was not very wide of the mark when, at the first Congress in 1873, he predicted that the time was not far distant when the great men of the land would find it absolutely necessary to consult with the workingmen in the matter of legislation, both political and commercial. The truth of his prediction is being vindicated to-day, far beyond the confines of the Dominion of Canada, as in Germany for instance. The record of the Trades and Labor Congress at each and every annual meeting since that year must in all fairness be that upon which the general public should determine whether or not due attention and heed had been accorded the advice of the President of 1873, when, in concluding his annual or rather opening address to the Congress, he said, "I urge upon you the necessity of being wise and moderate in your deliberations and enactments, and let those who are watching your movements . . . be compelled to admit that we are honest, earnest and prudent workers."

STATISTICS OF

WAGES AND COST OF LIVING.

WEEKLY WAGES—RETURNS FROM EMPLOYES.

TABLE I.—Showing by classes of workers in respect to sex and age, the average wages earned and hours employed in a full week as derived from returns collected from 3,814 employes in 39 localities in Ontario for the year 1889.

Localities.	Males over 16 years.				Males under 16.		Females over 16.		Females under 16.		All classes.	
	With dependents.		Without dependents.									
	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.
	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.
Aylmer	9 04	60.71	7 40	60.25			4 30	55.20			8 45	60.26
Barrie	8 43	58.99	7 66	59.81			3 67	60.00			8 03	59.34
Berlin	8 90	58.03	7 82	60.60	2 00	69.00	4 25	57.33			7 74	58.80
Bowmanville	9 28	60.00	8 19	60.00							9 00	60.00
Brantford	9 62	60.08	6 92	59.73	2 75	59.50	4 67	55.90			7 60	59.49
Brockville	11 08	63.08	8 85	60.71			5 02	59.23			9 71	61.96
Carleton Place	8 84	64.19	6 59	66.07							8 19	64.71
Chatham	10 58	62.47	8 24	62.62			5 00	60.00			10 25	62.47
Cobourg	9 14	59.26	8 10	60.18	3 00	60 00	4 50	60.00	3 00	60.00	7 82	59.58
Collingwood	9 38	60.26	8 51	62.33			7 00	69.60			8 87	61.82
Cornwall	9 28	61.71	9 64	61.80							9 36	61.73
Galt	9 81	58.92	8 13	58.92							9 39	58.92
Gananoque	10 36	59.45	6 85	57.69			5 15	54.40			8 51	58.09
Guelph	10 83	60.58	8 54	58.78			5 00	59.75			10 32	60.27
Hamilton	9 98	57.84	8 59	57.46			5 29	59.71	2 10	60.00	9 38	57.93
Kingston	7 70	60.08	5 97	62.81			3 75	65.00			6 92	61.26
Lindsay	8 72	63.20	7 25	63.08			3 50	51.00			8 20	62.89
Listowel	8 78	62.72	7 24	64.16			5 00	61.71			7 78	63.22
London	8 73	58.90	6 86	58.40	3 75	72.00	3 95	56.05			7 76	58.55
Orillia	10 76	59.58	8 28	60.00							10 08	59.70
Oshawa	10 83	57.41	10 42	57.44							10 74	57.42
Ottawa	10 27	60.15	9 80	58.00			3 99	59.89	2 83	60.00	9 36	59.89
Owen Sound	8 77	60.62	9 68	60.30							9 17	60.48
Perth	9 55	60.49	8 58	59.91			3 77	60.00			9 11	60.32
Peterborough	10 12	58.18	9 03	57.88			3 96	52.29	2 00	54.00	9 03	57.44
Petrolea	11 42	59.33	10 13	60.00							10 90	59.60
Preston	8 65	59.56	7 77	59.29			4 38	60.00			8 04	59.47
*St. Catharines	9 78	61.01	7 94	59.06	2 42	60 00	4 34	58.24	2 50	60.00	8 74	60.41
St. George	10 39	59.00	6 00	60.00							8 93	59.33
St. Thomas	9 20	65.22	7 82	62.00							8 93	64.59
Stratford	10 26	60.17	7 60	60.89	2 22	57.60	4 80	59.52			8 71	60.30
Toronto	10 76	58.19	9 23	58.80			5 25	54.16			9 75	58.03
Waterloo	7 49	63.00	5 95	57.60							7 24	62.13
Whitby	9 48	59.76	7 85	59.85							9 02	59.78
Woodstock	10 36	61.04	9 38	59.80							10 26	60.92
The Province	9 90	60.17	8 13	59.96	2 52	60.47	4 67	57.95	2 62	59.33	8 98	59.95

*Thorold, Merritton, Niagara Falls and Port Dalhousie are included with St. Catharines.

WEEKLY WAGES—RETURNS FROM EMPLOYERS.

TABLE II.—Showing by classes of workers in respect to sex and age, the average wages earned and hours employed in a representative week as derived from returns received from 549 employers of labor in 180 localities in Ontario for the year 1889.

Localities.	Males over 16.		Males under 16.		Females over 16.		Females under 16.		All classes.	
	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.	Wages.	Hours.
	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.	$ c.	No.
Almonte	7 56	57.39	2 37	55.13	4 10	57.56	2 53	55.22	5 45	56.95
Aylmer	7 13	54.78	.....	.....	4 13	60.00	.....	.....	6 16	56.46
Barrie	9 13	61.24	2 00	60.00	5 04	53.00	3 00	54.00	8 49	60.25
Belleville	8 38	63.88	.....	.....	.....	.....	.....	.....	8 38	63.88
Berlin	7 50	58.92	1 95	58.64	4 30	57.17	2 50	58.36	6 04	58.44
Bowmanville	9 89	55.20	3 94	55.00	.....	.....	.....	.....	9 73	55.19
Brampton	9 18	58.17	.....	.....	.....	.....	.....	.....	9 18	58.17
Brantford	9 29	56.73	1 99	58.69	4 30	58.26	2 14	58.57	8 59	56.93
Brockville	9 09	58.69	3 06	59.71	3 54	58.29	.....	.....	7 71	58.76
Carleton Place	7 36	58.96	.....	.....	.....	.....	.....	.....	7 36	58.96
Chatham	8 92	59.55	.....	.....	.....	.....	.....	.....	8 92	59.55
Clinton	7 51	59.05	2 97	59.00	.....	.....	.....	.....	7 14	59.05
Cobourg	8 80	60.00	4 00	60.00	.....	.....	.....	.....	8 00	60.00
Collingwood	5 53	57.55	1 25	60.00	3 62	51.47	2 08	51.00	3 87	53.43
Cornwall	7 65	60.18	2 72	59.48	4 93	58.75	2 40	58.32	6 00	59.48
Dundas	7 99	59.19	2 06	57.89	4 55	59.68	2 20	55.80	6 42	59.04
Galt	7 46	56.80	2 38	55.88	3 29	56.32	.....	.....	6 79	56.71
Gananoque	9 57	56.49	2 13	46.00	4 62	50.67	.....	.....	8 70	55.32
Guelph	8 30	57.88	1 98	46.25	4 19	53.75	.....	.....	7 23	56.37
Hamilton	8 89	56.43	2 84	56.82	4 73	52.64	1 73	49.19	8 10	55.88
Hespeler	6 39	59.89	2 94	60.90	4 46	58.99	2 73	58.17	4 89	59.40
Ingersoll	7 38	60.47	.....	.....	.....	.....	2 00	60.00	7 26	60.45
Kingston	8 27	58.01	1 55	37.40	5 44	54.83	1 75	55.00	6 85	54.54
Lindsay	7 60	59.67	5 00	60.00	4 25	56.48	.....	.....	6 60	58.77
Listowel	7 99	60.00	2 58	60.00	3 46	60.00	.....	.....	6 22	60.00
London	7 92	57.49	2 27	56.87	3 91	53.48	1 97	53.50	6 48	56.57
Orillia	8 32	59.19	2 87	59.00	4 76	49.41	.....	.....	7 49	58.09
Oshawa	9 24	57.50	2 42	59.29	.....	.....	.....	.....	8 94	57.58
Ottawa	7 96	59.89	3 25	58.50	3 16	57.64	.....	.....	7 85	59.84
Owen Sound	7 95	58.35	2 25	61.50	2 40	53.60	.....	.....	7 08	57.96
Peterborough	8 29	59.93	3 25	60.00	4 53	58.43	.....	.....	7 52	59.64
Petrolea	9 72	59.33	3 18	53.90	.....	.....	.....	.....	9 43	59.09
Port Hope	8 56	58.86	2 68	52.84	4 16	56.42	.....	.....	6 85	57.55
Preston	7 15	60.00	.....	.....	.....	.....	.....	.....	7 15	60.00
Ridgetown	7 59	58.15	2 50	60.00	3 10	57.30	.....	.....	6 66	58.07
St. Catharines	9 12	58.77	2 78	59.44	4 54	58.79	1 96	55.71	7 89	58.74
St. George	9 00	72.00	.....	.....	5 00	60.00	.....	.....	7 00	66.00
St. Mary's	7 03	61.37	2 28	60.33	5 10	61.09	3 09	60.00	5 81	61.13
St. Thomas	9 31	61.01	2 70	60.00	.....	.....	.....	.....	9 16	60.99
Sarnia	8 65	59.83	2 50	60.00	4 48	60.00	2 33	60.00	7 78	59.86
Simcoe	7 31	60.00	.....	.....	.....	.....	.....	.....	7 31	60.00
Stratford	8 14	58.78	.....	.....	.....	.....	.....	.....	8 14	58.78
Toronto	9 57	56.57	2 66	55.46	4 27	53.21	2 31	53.69	8 09	55.84
Uxbridge	7 69	58.60	3 00	54.00	4 34	54.75	.....	.....	6 88	57.69
Walkerton	7 45	59.79	1 91	60.00	2 78	60.00	1 00	60.00	5 88	59.85
Waterloo	7 01	58.63	2 06	58.29	2 84	54.00	1 68	51.60	6 26	58.13
West Toronto Junction	8 49	57.12	.....	.....	.....	.....	.....	.....	8 49	57.12
Whitby	7 22	58.93	.....	.....	4 00	59.00	.....	.....	7 09	58.93
Windsor	9 28	58.50	.....	.....	4 86	54.00	.....	.....	7 66	56.85
Woodstock	9 13	58.85	2 95	59.00	.....	.....	.....	.....	9 10	58.85
Other places	7 81	61.51	3 02	58.68	4 23	57.97	2 54	55.40	7 03	60 83

WEEKLY WAGES—OCCUPATIONS.

TABLE III.—Showing by occupations and sub-occupations the average hours employed and wages earned for a representative week in the last six months for the year 1889 in 181 cities, towns and villages of Ontario, based on returns of 17,328 work people collected from employers, and 3,814 collected from employés.

Occupations.	Average for week.		Occupations.	Average for week.	
	Hours.	Wages.		Hours.	Wages.
Males over 16.	No.	$ c.	Males over 16.	No.	$ c.
Apprentice and boy helper	57.17	3 67	Cabinet maker	58.19	9 68
Axe and agricultural hand implement employé:			Candle maker	60.00	8 30
			Canning factory employé:		
Axe maker	48.50	14 35	Can maker	60.00	11 17
Bit drawer	50.67	15 15	Filler and labeller	60.00	4 50
Fork maker	54.00	10 84	Processor	60.00	12 19
Grinder	54.88	10 42	Caretaker	63.00	8 42
Hammerer	52.36	12 55	Carpenter	56.88	10 37
Helper	48.00	9 72	Carpenter (ship) or caulker	57.48	9 32
Knife maker	59.55	13 51	Carpet weaver	58.09	9 07
Straightener	57.40	11 26	Carriage maker	58.25	10 08
Temperer	54.55	10 16	Carriage trimmer	57.47	10 51
Various	56.73	7 80	Carter	62.56	6 39
Axle maker	60 00	10 22	Carver	57.49	12 74
Baby carriage maker	60.00	9 50	Castings cleaner	54.44	8 34
Bag maker (paper)	57.50	9 45	Cellarman	61.20	8 02
Baker	64.55	9 16	Chain maker	58.00	10 65
Barber	71.38	8 85	Chair maker	57.33	8 37
Binding twine maker	59.76	8 80	Cigar maker	48.57	8 14
Blacksmith	58.92	10 06	Clerk (office)	57.44	8 81
Blacksmith's helper	58.93	7 08	Coffee and spice mills employé	52.00	9 75
Boat and canoe builder	59.21	9 53	Confectioner	59.10	8 42
Boilermaker	59.27	11 75	Confectioner's helper	55.64	4 64
Boilermaker's helper	59.64	7 44	Cooper	58.85	9 25
Bolt maker	60.00	11 25	Core maker	59.27	8 28
Bookbindery employé:			Cork cutter	55.00	9 88
Binder	54.59	9 80	Cotton mill employé:		
Cutter	57.08	10 00	Band boy	61.50	4 66
Forwarder	55.67	9 75	Beamer	57.50	8 92
Ruler	55.50	11 50	Bleacher	52.31	5 11
Book keeper	57.27	11 51	Carder	60.00	13 48
Boot and shoe factory employé:			Card helper	60.28	4 80
Bottomer	50.57	9 76	Doffer	60.00	3 60
Cleaner	48.67	9 76	Drawer in	60.00	5 35
Cutter	55.19	10 46	Dresser	62.00	9 48
Finisher	56.95	10 40	Dyer	60.00	18 75
Fitter	56.50	8 96	Dyer's helper	58.75	6 28
Heeler	53.86	9 75	Filler in	61.33	6 20
Laster	52.39	9 15	Finisher	58.75	12 19
Machine operator	53.15	9 95	Finisher's helper	62.20	5 48
Sewer	54.50	9 50	Folder	60.00	10 88
Sole cutter	52.15	8 08	Grinder	58.00	7 17
Trimmer	57.00	10 10	Loom fixer	60.74	10 67
Turn maker	52.75	9 70	Napper	53.33	5 26
Various	57.00	8 50	Picker tender	60.50	5 86
Bottler	59.96	6 80	Piecer	58.33	6 41
Boxmaker (wood)	53.74	7 83	Roll coverer	60.00	13 00
Brass, worker in:			Rover	60.00	4 42
Buffer	58.38	9 03	Section hand	60.74	8 63
Finisher	57.92	10 65	Slubber	60.00	5 64
Helper	59.58	7 12	Speeder	60.00	14 70
Moulder	59.17	11 40	Spinner	60.28	9 71
Brewer	60.00	19 83	Spinner's helper	60.11	3 99
Brewer's helper	60.46	7 84	Spooler	65.00	9 83
Bricklayer	55.31	15 24	Stripper	60.50	5 98
Brickmaker	57 76	10 21	Twister	60 00	7 78
Brickyard hands	53 64	7 01	Weaver	59.83	7 03
Broom maker	58.07	8 50	Various	60.92	6 85
Brush maker	58.33	9 45	Deliveryman	62.02	8 09
Butcher	65.81	9 03	Draughtsman	53.60	14 43
Button factory employé	57.29	8 10	Driller	58.51	8 31
Cab driver	83.50	7 93	Dye works employé	60.00	7 90

TABLE III.—WEEKLY WAGES—OCCUPATIONS.—*Continued.*

Occupations.	Average for week.	
	Hours.	Wages.
Males over 16.	No.	$ c.
Edge tool maker	48.00	12 25
Electrician	66.00	13 75
Electric light trimmer	62.00	7 88
Electrotyper	55.20	16 00
Elevator attendant	60.00	7 50
Embroiderer	50.00	14 33
Emery wheel maker	60.00	9 13
Engineer (stationary)	62.56	9 35
Engraver	51.00	13 42
Erector (agricultural works)	55.38	8 28
Excavator	50.00	9 33
Fanning mill maker	60.00	9 32
Felt and gravel roofer	60.00	9 30
File cutter	54.00	10 08
Finisher (wood)	58.36	8 85
Fireman	62.67	7 58
Fisherman	82.33	10 00
Fitter	57.55	11 33
Fitter's helper	54.50	7 16
Flax mill hand	59.45	6 55
Foreman:		
Agricultural works	59.14	15 00
Blacksmith	59.83	14 17
Boilermaker	59.00	16 38
Bookbindery	55.00	12 00
Brewery	64.86	10 90
Bricklayer	50.00	19 58
Brushmaker	57.75	14 25
Button factory	52.00	15 12
Cabinet maker	59.50	13 50
Carpenter	57.43	14 24
Carriage works	58.50	14 28
Cigar factory	52.25	12 00
Coffin factory	59.50	16 13
Cotton mills	60.00	16 19
Foundry and machine shop	59.25	14 25
Furniture factory	60.00	15 56
Gas works	67.00	19 03
Harness maker	59.75	13 50
Lumber mills	61.07	16 30
Machinist	58.19	15 73
Marble works	60.00	14 33
Miller	61.00	13 72
Moulder	58 22	16 39
Oil works	59.82	14 23
Painter	58.38	13 67
Paper mills	57.50	16 13
Piano and organ factory	58.50	16 92
Planing mills	57 23	11 35
Pork packing house	64.60	12 43
Printing office	58.48	12 14
Railway (section boss)	60.00	10 70
Sash and door factory	60.00	12 75
Stone cutter	51.00	22 22
Tannery	59.64	13 68
Tinsmith	60.00	13 00
Trunk factory	55.00	14 67
Woodworker	59.80	15 40
Woollen mills	59.78	13 85
Various	59.21	14 21
Forge and rolling mills:		
Heater	59.62	21 43
Heater's helper	60.00	11 35
Rougher	60.00	14 47
Shingler	59.20	18 40
Various	60.00	10 74
Furnaceman or melter	58.76	9 89

Occupations.	Average for week.	
	Hours.	Wages.
Males over 16.	No.	$ c.
Furrier	53.73	12 50
Gardener	62.20	6 85
Gas works employé:		
Coal wheeler	67.08	9 08
Inspector	60.83	11 46
Lamplighter	36.43	7 45
Meter attacher and repairer	74.20	13 54
Service layer	65.14	10 41
Stoker	69.63	13 75
Various	68.24	10 98
Gilder	59.50	10 90
Glove cutter	57.14	14 52
Glove maker	57.88	9 17
Glue maker	63.00	7 25
Gluer	58.43	7 30
Grain shoveller	46.50	8 72
Hame maker	60.00	7 53
Harness maker	59.30	8 36
Hat maker	55.50	8 10
Heading mill employé	60.00	7 13
Hop drier	66.00	9 00
Japanner	55.00	8 59
Jewellery manufacturing	51.50	10 86
Joiner	59.32	10 05
Kilnman	64.80	7 38
Laborer (builder's)	55.19	9 25
Laborer (general)	59.49	7 25
Last maker	59.00	9 75
Lather	52 40	11 94
Lath maker	64.00	6 81
Lithographing employé	51.87	10 27
Locksmith	54.75	10 56
Lumber mill employé:		
Bolt puller	60.40	7 62
Boom-man	65.50	8 32
Canter	62.00	6 94
Culler	61.06	9 25
Edger	62.11	8 53
Filer	61.86	12 16
Gate hand	63.67	7 80
Jacker	64.47	7 59
Jointer	62.29	9 24
Loader	64.63	7 67
Log roller	63.89	7 31
Matcher	58.33	9 33
Measurer	60.00	7 42
Oiler	62.13	7 47
Piler	60.50	7 38
Sawdust man	63.86	6 24
Sawyer	60.16	9 17
Setter	63.42	8 66
Shingle maker	63.17	8 09
Slabber	64.17	7 08
Slash table	63.67	7 86
Sorter	65.11	8 04
Stave cutter	60.00	16 50
Stave piler	60.00	6 00
Tail sawyer	62.85	7 63
Trimmer	64.88	8 09
Yardman	59.75	7 39
Various	61.07	7 66
Machine hand	57.97	8 71
Machinist	58.17	10 80
Machinist's helper	57.06	7 08
Malt house hand	66.13	8 45
Maltster	60.00	14 75
Marble cutter	59.36	10 40

TABLE III.—WEEKLY WAGES—OCCUPATIONS.—*Continued.*

Occupations.	Average for week.		Occupations.	Average for week.	
	Hours.	Wages.		Hours.	Wages.
Males over 16.	No.	$ c.	Males over 16.	No.	$ c.
Marble polisher	59.06	8 54	Printing office employé:		
Mat factory employé	59.14	6 54	Editor	49.67	13 67
Miller	65.35	9 71	Press feeder	56.56	5 63
Millwright	59.22	12 14	Pressman	56.51	9 57
Miscellaneous n. e. s	58.44	7 84	Printer	56.74	9 09
Moulder	58.01	12 67	Proof reader	56.50	12 50
Moulder's helper	57.48	7 10	Reporter	53.40	9 10
Moulding and picture frame maker	58.75	10 40	Quarryman	60.00	7 50
Nickel plater	58.37	11 25	Railway employé:		
Nursery employé	57.66	5 77	Baggageman	60 00	9 08
Oil refinery employé:			Brakeman	66.87	10 31
Pressman	60.00	7 25	Car builder	53.89	9 01
Pumpman	60.00	8 88	Car cleaner	67.09	6 95
Stillman	66.00	12 62	Car inspector	70.29	10 44
Treater	60.00	12 57	Car repairer	57.00	8 98
Various	57.91	9 06	Car wheel tapper	74.00	9 22
Packer (flour)	60.91	7 67	Conductor	71.60	15 12
Packer (various)	58.79	7 47	Engineer	77.36	18 73
Paint and lead works employé	55.00	7 40	Fireman	74.79	11 70
Painter	57.87	9 30	Sectionman	61.14	7 10
Paper hanger	55.00	11 04	Signalman	84 00	7 55
Paper mills employé:			Switchman	75.74	9 11
Bleacher	59.50	6 84	Wiper	66.80	6 34
Cutter	56.50	7 87	Yardman	77.29	11 09
Finisher	58.75	8 78	Various	63.33	6 97
Machine tender	62.28	10 07	Rattan worker	59.55	8 85
Machine tender's helper	61.06	6 38	Rivet maker	58.70	7 70
Paper maker	65.45	10 53	Rivetter	58.71	10 55
Pulp machine hand	60.00	4 33	Saddler	60.00	9 33
Rag engineer	60.00	12 00	Safe maker	54.19	11 03
Rag engineer's helper	59.73	8 28	Salesman	60.80	8 97
Rag washer	59.57	8 97	Salt works employé	60.00	6 79
Pattern maker	58.84	11 76	Sash and door maker	58.84	9 33
Photographer	58.00	9 17	Scale maker	60.00	10 00
Piano and organ factory employé:			Sewing machine employé	53.25	8 85
Action finisher	55.67	13 29	Shipper	58.99	7 87
Action maker	58.00	10 45	Shoddy mill hand	60.00	5 42
Assembler	55.00	15 00	Shoemaker	60.45	8 64
Bellows maker	57.80	10 30	Silver plating employé	59.00	8 71
Bellyman	55.25	11 62	Soap maker	56.15	8 56
Case maker	58.92	10 41	Solderer	56.36	8 55
Key finisher	56.00	11 65	Springmaker	50.00	12 63
Key maker	59.00	10 21	Stableman	70.53	7 30
Polisher	55.00	11 08	Stair builder	53.33	11 83
Regulator	57.60	15 63	Stenographer	60.00	10 00
Rubber	55.00	10 20	Stereotyper	47.33	8 83
Sounding board maker	57.25	12 42	Stone cutter	53.21	16 73
Stringer	56.00	9 43	Stone mason	57.68	14 61
Trimmer	59.69	9 61	Stove mounter	59.29	9 65
Tuner	57.31	17 02	Stove polisher	59.23	9 77
Veneerer	54.50	10 44	Street car driver	77.05	8 39
Wind chest maker	56.88	10 59	Tack maker	59.00	8 00
Wood pipe maker	57.50	9 13	Tailor	58.28	10 28
Various	56.00	8 36	Tailor's cutter	56.92	16 52
Pin maker	58.00	15 95	Tank repairer	63.50	7 86
Planing mill employé:			Tannery employé:		
Bench hand	57.86	9 83	Beam hand	59.47	7 71
Planer	56.50	7 59	Currier	59.17	8 09
Sticker	56.67	11 25	Cutter	58.13	8 22
Plasterer	54.73	13 51	Dyer	59.83	8 48
Plumber	60.89	11 84	Finisher	59.94	8 02
Polisher (iron)	54.09	10 81	Grainer	60.00	8 60
Polisher (wood)	58.35	7 17	Grinder	59.50	6 25
Pork packinghouse employé	60.50	7 72	Roller	59.67	9 00
Porter	58.24	7 23	Shaver	59.75	12 51
Potter	56.89	10 45	Skiver	57.50	9 50
			Table hand	57.78	7 56

TABLE III.—WEEKLY WAGES—OCCUPATIONS.—*Continued.*

Occupations.	Average for week.	
	Hours.	Wages.
Males over 16.	No.	$ c.
Tannery employé—*Continued:*		
Tanner	59.27	7 85
Yardman	59.65	7 29
Various	59.40	6 80
Teamster	61.30	7 27
Telegraph operator	78.67	9 25
Tinsmith	58.98	9 31
Tinsmith's helper	59.00	7 99
Tinware factory employé:		
Lead worker	58.00	7 67
Press hand	59.00	8 10
Spinner	59.00	11 73
Various	59.00	12 10
Tobacco roller	55.00	10 61
Traveller	56.91	13 00
Trunk maker	54 34	9 19
Tub and pail maker	60.00	8 25
Tuck pointer	50.00	15 00
Type founder	52.80	9 89
Upholsterer	58.82	10 03
Valise maker	53.02	8 57
Varnish maker	59.00	10 25
Wagonmaker	60.00	9 00
Warehouseman	59.22	8 80
Washboard maker	60.00	9 50
Watchmaker	57.60	12 20
Watchman	70.54	8 05
Wheel factory employé:		
Bender	58.39	7 66
Morticer	60.00	9 80
Rimmer	60 00	9 38
Spoke driver	60.00	8 25
Turner	60.00	8 83
Various	58 80	7 41
Whip maker	50.57	10 16
White bronze worker	60.00	8 14
Wincey mill employé	59.67	7 33
Wire worker	55.64	9 05
Wood turner	58.13	9 79
Wood worker	59.00	9 50
Woollen mill employé:		
Carder	60.20	10 76
Card helper	59.48	5 99
Comb tender	58.60	4 42
Designer	60.00	19 69
Dyer	59.61	11 91
Dyer's helper	59.13	6 14
Feeder	60.00	4 47
Finisher	59.59	10 73
Finisher's helper	58.40	5 60
Fuller	60.00	8 52
Gigger	56.92	5 51
Knitter	57.73	10 60
Loom fixer	60.13	9 03
Picker	59.64	5 10
Piecer	60.00	3 58
Scourer	65.36	7 59
Spinner	59.90	9 14
Spinner's helper	60.00	4 99
Twister	59.33	6 91
Warper	59.26	7 47
Weaver	58.79	8 98
Wool sorter	58.72	7 14
Various	58.20	6 19
Females over 16.		
Apprentice	54.00	2 33

Occupations.	Average for week.	
	Hours.	Wages.
Females over 16.	No.	$ c.
Bag maker (paper)	51.90	5 08
Binding twine factory employé:		
Baller	59.38	3 31
Spinner	59.43	4 01
Various	59.00	3 25
Biscuit and confectionery hand	56.24	2 72
Bookbindery employé:		
Binder	52.14	4 59
Folder	53.62	3 63
Pager	55.00	4 50
Book-keeper	54.58	6 00
Boot and shoe factory employé:		
Cutter	45.00	3 55
Fitter	49.44	4 08
Machine operator	47.93	5 09
Paster	48.25	6 55
Various	55.63	3 70
Box maker (paper)	56.62	3 96
Broom factory employé	56.84	3 54
Brush factory employé	57.53	3 21
Button factory employé	57.43	3 11
Canning factory employé	58.00	3 97
Carriage trimming	45.60	4 91
Cigar factory employé:		
Booker	51.30	4 40
Bunch breaker	52.25	4 70
Cigar maker	50.57	6 58
Packer	51.43	4 71
Roller	52.25	5 00
Stripper	50.96	2 44
Collar and cuff maker	54.00	4 20
Cork sorters	50.00	5 45
Corset maker	57.60	3 60
Corset stay maker	54.00	4 31
Cotton mill employé:		
Drawer in	57.14	4 04
Finisher's helper	63.08	4 56
Intermediate tender	55.63	4 62
Picker (waste)	58.50	3 53
Reeler	59.33	4 58
Rover	60 00	5 12
Slubber	59.44	5 64
Speeder	58.42	5 45
Spinner's helper	59.25	4 17
Spooler	57.95	3 91
Twister	56.86	3 56
Warper	58.60	4 89
Weaver	59.23	5 44
Web drawer	59.34	6 29
Winder	58.67	3 70
Various	59.35	4 54
Dressmaker	54.29	3 84
Embroiderer	50.00	5 42
Envelope maker	51.00	3 38
Forewoman:		
Dressmaker	56.14	10 64
Knitting mill	57.00	8 51
Milliner	55.20	10 23
Various	55.33	6 25
Furrier	52.40	4 91
Glove maker	54.98	5 24
Hair cloth weaver	58.40	4 92
Hame factory employé	56.00	4 50
Hat factory employé:		
Finisher	49 37	3 82
Machine operator	49.43	5 39
Trimmer	55.00	4 25

TABLE III.—WEEKLY WAGES—OCCUPATIONS.—*Continued.*

Occupations.	Average for week.		Occupations.	Average for week.	
	Hours.	Wages.		Hours.	Wages.
Females over 16.	No.	$ c.	Females over 16.	No.	$ c.
Japanner	59.00	4 05	Woollen mill employé – *Continued.*		
Jewellery manufacturing	46.40	3 51	Spooler	60.00	3 40
Knitting mill operative:			Twister	57.28	2 98
Cutter	56.63	4 17	Warper	59.40	3 88
Knitter	53.79	4 04	Weaver	57.93	5 07
Machine worker	59.29	5 40	Winder	56.54	3 07
Sewer	56.62	4 53	Various	57.91	3 45
Sorter	54.00	3 13	Males under 16.		
Various	55.43	3 55			
Laundress	55.85	4 48	Apprentice or boy helper	57.05	2 70
Machine operator	53.03	4 54	Binding twine factory employé	59.00	2 00
Milliner	55.03	3 82	Biscuit and confectionery	56 84	2 48
Miscellaneous n. e. s	57.34	3 98	Button factory	58.00	1 80
Packer	53.96	2 94	Cash boys	57.44	2 16
Painter	60.00	5 00	Cigar stripper	47.26	2 16
Paper mill employé:			Cotton mill employé	59.53	2 63
Cutter	57.91	2 89	Flax mill employé	59.00	2 97
Finisher	57.80	3 89	Messenger	55.18	2 14
Rag picker	60 00	3 96	Miscellaneous n. e. s	58.19	2 60
Rag sorter	57.27	4 10	Press feeder	54.00	2 06
Various	58.33	4 68	Route boy	6.00	1 03
Pin factory employé	57.07	3 33	Woollen mill employé	57.70	2 72
Press feeder	55.38	4 16	Females under 16.		
Printer	54.60	4 15			
Rattan worker	59 63	2 48	Apprentice	52.50	0 92
Saleswoman	56.97	4 93	Bag maker (paper)	49.00	2 63
Seamstress	55.17	3 45	Binding twine factory employé	59 00	2 25
Solderer	59.00	5 25	Biscuit and confectionery hand	49.30	1 88
Tailoress:			Bookbindery employé	53.86	1 81
Coat maker	56 70	5 88	Box maker (paper)	58.63	2 59
Pant and vest maker	53.93	4 35	Broom maker	57.00	2 08
Tannery employé	59.00	4 06	Button factory employé	55.87	2 26
Tent maker	54.00	3 25	Canning factory employé	58.00	2 33
Trunk liner	54.00	3 27	Cash girl	53.33	2 46
Type writer	60.00	4 50	Cigar stripper	47.85	2 57
Upholsterer	54 67	3 98	Cotton mill employé	57.56	2 21
Whip maker	48.00	4 38	Glove maker	55.36	2 65
Woollen mill employé:			Knitting mill employé	55.00	2 53
Burler	60.00	3 70	Machine operator	54.10	2 87
Cord helper	59.00	3 59	Miscellaneous n. e. s	54.88	2 58
Comb tender	57.17	3 12	Paper mill employé	55.43	2 64
Drawer in	59.95	4 04	Press feeder	60.00	3 00
Finisher	56.18	3 73	Soap factory employé	58 00	2 59
Folder	57.50	4 38	Tailoress	54.67	3 67
Piecer	60.00	3 24	Tinware factory employé	59.00	2 79
Reeler	59.08	4 07	Whip maker	48.00	2 20
Spinner	59.68	3 13	Woollen mill employé	56.61	2 40

YEARLY WAGES AND COST OF LIVING—LOCALITIES.

TABLE IV.—Showing by localities the averages of time employed, yearly earnings and cost of living for the year 1889 of workers with dependents, classified as owners, tenants and boarders.

Localities.	No. of returns.	No. of dependents.		Time employed.		Yearly earnings.						Cost of living.		Surplus or deficit (-).	
		Total.	Under 16.	Hours per week.	Days in year.	Wages from occupation.		Extras.		Earnings of dependents.		Total.			
Males, Owners.				No.	No.	$	c.	$	c.	$	c.	$	c.	$	c.
Aylmer	23	3.13	2.00	59.52	253.30	352	72	18	91	7	39	379	02	351	18	27	84
Barrie	45	4.20	2.67	58.93	286.42	390	85	6	49	2	02	399	36	315	92	83	44
Berlin	10	3.00	2.00	58.90	265.10	410	65	19	00	13	00	442	65	414	96	27	69
Bowmanville	30	3.57	2.37	57.80	285.93	430	46	7	07	4	13	441	66	351	87	89	79
Brantford	17	2.41	1.06	58.41	267.00	435	12	4	70	22	06	461	88	365	70	96	18
Brockville	46	3.48	2.24	63.28	281.09	521	31	2	39	3	91	527	61	423	65	103	96
Carleton Place	14	4.29	3.36	62.43	306.93	439	63	2	14	21	43	463	20	423	62	39	58
Chatham	38	3.34	2.08	61.47	267.50	451	81	8	03	8	58	468	42	415	24	53	18
Cobourg	9	4.00	2.56	59	89	285.89	490	36	9	44	26	67	526	47	352	94	173	53
Collingwood	15	4.40	3.20	63.47	212.80	335	69	36	27	2	67	374	63	364	48	10	15
Cornwall	11	4.27	2.73	59.45	258.82	414	99	6	49	24	18	445	66	396	51	49	15
Galt	17	3.53	1.88	58.18	257.94	439	07	2	94	4	41	446	42	378	97	67	45
Gananoque	11	3.45	1.73	58.09	246.91	446	36	27	91	13	64	487	91	421	48	66	43
Guelph	56	4.13	2.84	60.05	275.00	495	16	4	86	0	89	500	91	439	68	61	23
Hamilton	43	4.23	3.00	57.02	247.21	425	40	7	05	20	35	452	80	425	84	26	96
Kingston	7	4.29	2.14	63.71	252.57	352	21	10	00	98	14	460	35	471	46	—11	11
Lindsay	32	3.78	2.09	62.06	262.84	379	18	2	72	22	69	404	59	371	61	32	98
Listowel	17	4.06	2.76	60.00	265.06	365	94	.....		20	00	385	94	312	12	73	82
London	54	3.67	2.13	56.65	279.89	404	98	12	43	32	57	449	98	413	47	36	51
Orillia	17	3.53	2.24	59.00	225.53	378	42	12	65	10	88	401	95	363	68	38	27
Oshawa	14	4.71	3.00	57.50	283.79	509	07	27	14	28	57	564	78	459	11	105	67
Ottawa	42	4.69	3.69	59.69	254.76	474	35	2	29	11	59	488	23	413	86	74	37
Owen Sound	11	5.73	4.00	59.73	286.27	412	32	.....		52	45	464	77	380	86	83	91
Perth	37	3.84	2.32	59.14	253.35	417	84	4	31	14	19	436	34	415	94	20	40
Peterborough	9	4.44	3.33	57.33	268.11	478	33	5	56	6	67	490	56	388	67	101	89
Petrolea	3	1.33	0.33	62.00	304.33	600	33	.....		.....		600	33	459	71	140	62
Preston	6	4.33	3.00	59.83	258.33	375	67	.....		30	00	405	67	370	17	35	50
St. Catharines	34	3.47	1.74	61.47	270.35	493	23	3	82	6	06	503	11	446	82	56	29
St. George	2	4.50	3.50	55.00	231.00	325	00	37	50	.....		362	50	350	00	12	50
St. Thomas	22	3.41	1.91	69.50	327.00	474	00	7	27	2	73	484	00	456	37	27	63
Stratford	61	3.46	2.11	58.56	293.15	469	44	9	46	20	08	498	98	425	03	73	95
Toronto	44	3.70	2.20	57.02	280.50	531	95	0	23	16	16	548	34	547	80	0	54
Waterloo	7	4.14	2.86	64	57	283.57	350	14	8	57	51	43	410	14	379	00	31	14
Whitby	15	3.93	2.13	59.47	281.67	475	33	16	67	40	00	532	00	422	73	109	27
Woodstock	23	3.70	2.26	61.39	281.26	466	87	5	22	14	61	486	70	396	78	89	92
The Province	842	3.81	2.42	59.79	272.06	444	85	7	60	15	22	467	67	409	75	57	92
Males, Tenants.																	
Aylmer	33	3.27	2.03	60.09	268.85	411	50	7	36	6	67	425	53	377	13	48	40
Barrie	45	3.67	2.27	59.04	290.84	395	83	7	22	.....		403	05	350	36	52	69
Berlin	21	3.29	2.10	57.29	265.38	396	40	0	48	6	67	403	55	386	11	17	44
Bowmanville	42	2.79	1.74	55.24	284.57	441	72	1	43	4	95	448	10	383	68	64	42
Brantford	21	3.62	2.52	60.76	285.00	463	86	9	43	10	95	484	24	430	50	53	74
Brockville	73	3.32	2.29	61.70	278.34	481	84	9	45	.....		491	29	467	05	24	24
Carleton Place	23	3.74	2.30	64.04	275.35	410	25	5	65	7	39	423	29	441	26	—17	97
Chatham	55	3.27	2.15	62.22	271.36	462	98	8	31	5	36	476	65	434	18	42	47
Cobourg	33	3.94	2.85	59.55	288.73	429	39	2	39	6	94	438	72	361	73	76	99
Collingwood	16	4.00	2	94	65.25	209.31	322	84	21	19	7	81	351	84	424	08	—72	24
Cornwall	26	3.42	2.42	61.92	266.73	400	61	8	11	12	12	420	84	407	51	13	33
Galt	22	3.05	1.86	57.82	264.64	423	24	11	00	13	64	447	88	394	51	53	37
Gananoque	17	3.65	2.18	58.88	274.59	455	64	14	83	24	88	495	35	439	53	55	82
Guelph	81	3.65	2.33	61.06	287.80	504	09	1	23	3	09	508	41	461	17	47	24
Hamilton	120	3.67	2.53	57.38	244.54	394	03	10	71	13	50	418	24	409	36	8	88
Kingston	29	3.07	1.55	59.93	244.90	315	55	19	21	44	93	379	69	410	83	—31	14
Lindsay	28	3.57	2.00	63.68	281.07	406	15	1	61	26	21	433	97	404	14	29	83
Listowel	19	3.05	2.05	63.90	289.63	406	81	13	16	2	63	422	60	378	81	43	79
London	89	3.97	2.61	57.54	271.69	385	37	15	27	30	73	431	37	420	56	10	81
Orillia	7	4.00	2.14	56.14	251.29	476	86	25	71	47	86	550	43	472	57	77	86

TABLE IV.—YEARLY WAGES AND COST OF LIVING—*Continued.*

Localities.	No. of returns.	No. of dependents.		Time employed.		Yearly earnings.				Cost of living.	Surplus of deficit (-).
		Total.	Under 16.	Hours per week.	Days in year.	Wages from occupation.	Extras.	Earnings of dependents.	Total.		
Males, Tenants.—*Con.*				No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Oshawa	19	4.00	3.00	57.58	273.79	482 95	3 95	6 31	493 21	442 92	50 29
Ottawa	176	4.42	3.43	59.97	255.82	425 20	1 12	14 50	440 82	417 45	23 37
Owen Sound	15	3.27	2.00	61.27	264.47	376 55	9 33	39 53	425 41	379 30	46 11
Perth	51	3.63	2.25	60.08	270.47	404 83	2 49	17 86	425 18	397 47	27 71
Peterborough	30	4.33	3.23	58.53	281.50	446 67	3 67	5 16	455 50	422 73	32 77
Petrolea	2	2.00	0.50	57.50	306.50	527 25	50 00	.....	577 25	545 70	31 55
Preston	12	3.25	2.17	59.00	254.42	345 33	5 83	5 00	356 16	354 83	1 33
St. Catharines	110	3.20	1.76	61.08	263.34	401 19	9 20	14 45	424 84	400 64	24 20
St. George	4	4.00	2.75	57.50	252.50	400 63	4 50	.....	405 13	397 75	7 38
St. Thomas	23	3.96	2.78	60.35	306.26	437 13	3 26	0 52	440 91	421 82	19 09
Stratford	109	3.29	2.01	58.15	288.92	475 58	4 22	11 42	491 22	431 57	59 65
Toronto	223	3.17	1.96	57.64	262.60	446 52	4 87	23 17	474 56	493 46	—18 90
Waterloo	19	3.26	2.21	62.63	256.11	311 63	15 90	7 63	335 16	339 90	— 4 74
Whitby	18	4.00	2.72	58.33	282.22	419 56	2 78	41 11	463 45	436 02	27 43
Woodstock	23	3.26	1.61	60.09	285.30	498 79	8 91	11 13	518 83	477 59	41 24
The Province	1,634	3.56	2.38	59.47	269.34	428 36	6 76	14 21	449 33	426 15	23 18
Males, Boarders.											
Bowmanville	2	1.50	0.50	57.50	285.00	463 00	.....	. .	463 00	413 50	49 50
Brockville	2	1.50	0.50	72.00	332.50	472 50	.....	.....	472 50	405 00	67 50
Cornwall	1	2.00	1.00	60.00	301.00	437 25	.....	.....	437 25	427 25	10 00
Gananoque	3	1.67	0.67	59.67	261.67	487 33	.....	....	487 33	386 00	101 33
Hamilton	6	1.83	1.17	57.33	227.67	413 67	0 83	.....	414 50	386 50	28 00
Kingston	4	1.25	0.25	59.75	195.00	276 35	.....	.....	276 35	324 25	—47 90
Lindsay	1	2.00	1.00	60.00	312.00	364 00	.....	. . .	364 00	364 00	.....
London	1	2.00	1.00	60.00	288.00	288 00	... ..	.....	288 00	300 00	—12 00
Oshawa	1	1.00	.....	45.00	242.00	363 00	.....	.....	363 00	329 60	33 40
Petrolea	1	2.00	1.00	55.00	280.00	490 00	.....	.....	490 00	430 00	60 00
St. Catharines	4	1.00	0.25	55.75	282.50	511 00	13 75	.....	524 75	468 69	56 06
Stratford	3	1.67	.....	56.67	268.67	431 67	...	.....	431 67	387 67	44 00
Toronto	11	1.45	0.55	56.82	282.45	517 79	.....	7 27	525 06	489 73	35 33
The Province	40	1.53	0.58	57.98	265.80	447 43	1 50	2 00	450 93	417 17	33 76
Females, Tenants.											
Aylmer	1	2.00	.....	60.00	286.00	275 00	.....	.....	275 00	261 00	14 00
Brockville	1	1.00	.....	60.00	300.00	300 00	.....	.....	300 00	382 00	—82 00
Cobourg	1	1 00	... .	60.00	300.00	225 00	.....	.....	225 00	198 00	27 00
Hamilton	3	3.00	1.33	60.00	300.00	345 00	.....	.....	345 00	358 33	—13 33
Kingston	1	2.00	2.00	70.00	234.00	119 00	200 00	....	319 00	310 00	9 00
London	4	1.75	1.25	54.25	254.00	197 70	39 00	.....	236 70	260 55	—23 85
St. Catharines	4	3.50	2.00	63.00	281.50	237 13	17 00	46 50	300 63	301 13	— 0 50
Stratford	2	1.50	0.50	57.00	240.00	245 00	30 00	80 00	355 00	315 00	40 00
Toronto	4	1.25	1.00	54.00	233.00	247 63	.... .	.....	247 63	300 00	—52 37
The Province	21	2.10	1.14	58.52	265.43	246 37	23 05	16 48	285 90	300 13	—14 23

TABLE IV.—YEARLY WAGES AND COST OF LIVING—*Continued.*

Localities.	No. of returns.	No. of dependents.		Time employed.		Yearly earnings.				Cost of living.	Surplus or deficit (-).
		Total,	Under 16.	Hours per week.	Days in year.	Wages from occupation.	Extras.	Earnings of dependents.	Total.		
All Classes.				No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Aylmer	57	3.19	1.98	59.86	262.88	385 39	11 89	6 84	404 12	364 62	39 50
Barrie	90	3.93	2.47	58.99	288 63	393 33	6 86	1 01	401 20	333 14	68 06
Berlin	31	3.19	2.06	57.81	265.29	401 00	6 45	8 71	416 16	395 41	20 75
Bowmanville	74	3.07	1.96	56.34	285.14	437 73	3 68	4 48	445 89	371 59	74
Brantford	38	3.08	1.87	59.71	276.95	451 00	7 32	15 92	474 24	401 51	72 73
Brockville	122	3.33	2.22	62.45	280.44	495 08	6 56	1 47	503 11	448 98	54 13
Carleton Place	37	3.95	2.70	63.43	287.30	421 37	4 32	12 70	438 39	434 58	3 81
Chatham	93	3.30	2.12	61.91	269.78	458 42	8 19	6 68	473 29	426 44	46 85
Cobourg	43	3.88	2.72	59.63	288.40	437 47	3 81	10 84	452 12	356 08	96 04
Collingwood	31	4.19	3.06	64.39	211.00	329 06	28 49	5 32	362 87	395 24	—32 37
Cornwall	38	3.63	2.47	61.16	265.34	405 74	7 43	15 29	428 46	404 85	23 61
Galt	39	3.26	1.87	57.97	261.72	430 14	7 49	9 61	447 24	387 73	59 51
Gananoque	31	3.39	1.87	58.68	263.52	455 42	18 03	18 48	491 93	427 94	63 99
Guelph	137	3.85	2.54	60.65	282.57	500 44	2 71	2 19	505 34	452 38	52 96
Hamilton	172	3.73	2 58	57.33	245.59	401 70	9 27	14 50	425 47	411 79	13 68
Kingston	41	3.07	1.54	60.80	241.07	313 19	20 17	48 54	381 90	410 27	—28 37
Lindsay	61	3.66	2.03	62.77	272.02	391 31	2 16	23 94	417 41	386 42	30 99
Listowel	36	3.53	2.39	62.06	278.03	387 51	6 95	10 83	405 29	347 32	57 97
London	148	3.78	2.39	57.14	274.31	386 79	14 77	30 37	431 93	412 83	19 10
Orillia	24	3.67	2.21	58.17	233.04	407 13	16 46	21 67	445 26	395 44	49 82
Oshawa	34	4.21	2.91	57.18	276.97	490 18	13 38	15 29	518 85	446 25	72 60
Ottawa	218	4.47	3.48	59.91	255 61	434 67	1 34	13 94	449 95	416 76	33 19
Owen Sound	26	4.31	2 85	60.62	273.69	391 68	5 39	45 00	442 07	379 96	62 11
Perth	88	3.72	2.28	59.68	263.27	410 30	3 26	16 32	429 88	405 24	24 64
Peterborough	39	4.36	3.26	58.26	278.41	453 98	4 10	5 51	463 59	414 87	48 72
Petrolea	6	1.67	0.50	59.33	301.00	557 58	16 67	.....	574 25	483 42	90 83
Preston	18	3.61	2.44	59.28	255.72	355 44	3 89	13 33	372 66	359 94	12 72
St. Catharines	152	3.21	1.72	61.08	265.89	420 35	8 32	13 04	441 71	410 14	31 57
St. George	6	4.17	3.00	56.67	245.33	375 42	15 50	.....	390 92	381 84	9 08
St. Thomas	45	3.69	2.36	64.82	316.40	455 16	5 22	1 60	461 98	438 71	23 27
Stratford	175	3.30	1.99	58.25	289.49	470 05	6 27	15 03	491 35	427 21	64 14
Toronto	282	3.16	1.93	57.46	265.74	459 81	3 88	21 13	484 82	499 05	—14 23
Waterloo	26	3.50	2.38	63.15	263.50	322 00	13 92	19 42	355 34	350 42	4 92
Whitby	33	3.97	2.45	58.85	281.97	444 91	9 09	40 61	494 61	429 98	64 63
Woodstock	46	3.48	1.93	60.74	283.28	482 83	7 07	12 87	502 77	437 19	65 58
The Province	2,537	3.60	2.33	59.54	270.15	432 63	7 09	14 37	454 09	419 52	34 57

YEARLY WAGES AND COST OF LIVING—LOCALITIES.

TABLE V.—Showing by localities the average of time employed, yearly earnings and cost of living for the year 1889 of workers without dependents, classified by sex and age.

Localities.	No. of returns.	Time employed.		Yearly earnings.			Cost of living.			Surplus.
		Hours per week.	Days in year.	Wages from occupation.	Extras.	Total.	Clothing.	Board and lodging.	Total.	
Males over 16:		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	c.
Aylmer	12	59.67	267.50	316 09	7 10	323 19	59 10	142 50	232 63	90 56
Barrie	63	59.81	298.95	376 05	.....	376 05	44 95	158 24	214 52	161 53
Berlin	15	60.60	277.20	359 41	.....	359 41	59 86	153 71	264 00	95 41
Bowmanville	26	58.04	284 19	385 32	1 77	387 09	82 88	146 81	270 08	117 01
Brantford	56	59.29	273.91	313 13	1 34	314 47	58 49	150 43	223 85	90 62
Brockville	51	60.71	276.98	394 31	3 14	397 45	92 06	164 35	301 98	95 47
Carleton Place	15	66.53	298 27	307 80	0 73	308 53	61 38	155 33	268 17	40 36
Chatham	13	62.62	279.46	356 46	2 69	359 15	65 00	156 00	267 08	92 07
Cobourg	11	59.55	284.73	371 71	0 91	372 62	81 18	158 77	225 00	147 62
Collingwood	18	61.00	264 72	363 53	1 11	364 64	78 42	157 44	273 63	91 01
Cornwall	10	61.80	255.70	377 88	4 20	382 08	63 00	173 30	298 18	83 90
Galt	13	58.85	246 00	324 25	5 77	330 02	45 20	143 33	233 28	96 74
Gananoque	13	56.46	239.54	257 63	7 00	264 63	44 08	131 46	209 46	55 17
Guelph	27	58.78	282.59	395 37	.....	395 37	53 48	162 25	265 78	129 59
Hamilton	39	56 90	244.41	341 73	1 99	343 72	67 31	160 89	282 67	61 05
Kingston	26	62.81	261.46	252 15	3 85	256 00	50 08	142 52	211 66	44 34
Lindsay	24	62.96	266.96	321 39	5 21	326 60	65 83	160 79	279 17	47 43
Listowel	31	61.16	291.66	347 65	1 61	349 26	63 71	144 07	252 00	97 26
London	57	57.54	274 39	30- 94	4 41	308 35	58 41	152 46	251 63	56 72
Orillia	9	59.44	277 33	378 72	.....	378 72	62 78	179 56	269 02	109 70
Oshawa	9	57.44	267.89	459 78	.....	459 78	75 00	186 33	331 89	127 89
Ottawa	30	57.97	244.60	380 23	2 07	382 30	64 57	190 17	296 42	85 88
Owen Sound	20	60.50	253 20	408 13	23 15	431 28	80 38	153 63	339 55	91 73
Perth	33	59.18	251 73	351 89	2 55	354 44	50 69	152 64	263 00	91 44
Peterborough	17	57.88	266.76	386 65	....	386 65	70 59	153 47	273 71	112 94
Petrolea	4	60.00	299.50	504 25	12 50	516 75	92 50	183 00	327 50	189 25
Preston	14	59.29	256 21	321 68	5 86	327 54	49 42	149 92	234 36	93 18
St. Catharines	36	59.66	255.81	328 53	2 00	330 53	66 89	166 32	295 72	34 81
St. George	3	60.00	289.33	311 67	.....	311 67	36 67	144 00	203 00	108 67
St. Thomas	11	62.00	295.45	378 75	.....	378 75	55 50	180 55	291 09	87 66
Stratford	103	58 83	281.81	338 52	6 51	345 03	69 22	160 88	295 19	49 84
Toronto	164	57.91	265 88	391 47	1 35	392 82	71 16	184 07	331 95	60 87
Waterloo	5	57.60	275 00	269 20	6 00	275 20	40 00	131 20	224 00	51 20
Whitby	13	59 85	262 31	332 60	9 23	341 83	61 92	150 31	295 42	46 41
Woodstock	5	59 60	287 80	449 72	1 20	450 92	71 75	174 80	334 60	116 32
The Province	996	59.28	271.18	355 30	3 13	358 43	64 29	162 38	277 48	80 95
Females over 16:										
Aylmer	4	54 60	249.50	157 00	...	157 00	40 00	63 50	121 75	35 25
Barrie	3	60.00	307 00	180 00	.....	180 00	36 67	108 00	144 67	35 33
Berlin	9	57 33	272.44	197 00	.....	197 00	50 83	104 00	169 67	27 33
Brantford	10	55.80	242.80	184 35	.....	184 35	60 00	99 50	165 63	18 72
Brockville	25	59.20	295 00	245 81	.....	245 81	93 40	117 56	215 64	30 17
Chatham	1	45 00	225 00	120 00	.....	120 00	.....	.....	120 00	.....
Cobourg	11	60 00	298 64	224 20	.....	224 20	34 55	123 55	174 73	49 47
Collingwood	5	62 40	256 60	275 40	.....	275 40	54 60	137 60	209 80	65 60
Gananoque	10	54.40	265 60	229 55	....	229 55	49 44	80 20	143 80	85 75
Guelph	4	59.75	272.50	230 00	...	230 00	45 00	118 75	183 00	47 00
Hamilton	14	59 64	295 00	242 57	.....	242 57	55 91	114 50	189 00	53 57
Kingston	1	60.00	156 00	117 00	.....	117 00	25 00	104 00	139 00	-22 00
Lindsay	2	51 00	206 50	116 25	5 00	121 25	....	....	121 25	....
Listowel	7	60.00	287.14	228 43	.....	228 43	64 29	97 14	177 14	51 29
London	18	54 44	276.78	177 89	5 92	183 81	40 61	101 83	160 01	23 80
Ottawa	36	59.56	259 17	174 39	.....	174 39	31 28	128 14	172 07	2 32
Perth	4	52 50	249 00	156 25	.....	156 25	45 67	71 33	125 75	30 50
Peterborough	7	52 29	296 43	186 36	.....	186 36	56 43	98 57	170 71	15 65
Preston	2	60 00	292.50	221 00	.....	221 00	42 50	112 00	174 50	46 50
St. Catharines	13	56.77	265.00	187 69	2 31	190 00	46 36	122 95	185 23	4 77

TABLE V.—YEARLY WAGES AND COST OF LIVING—LOCALITIES.—*Con.*

Localities.	No. of returns.	Time employed.		Yearly earnings.			Cost of living.			Surplus.
		Hours per week.	Days in year.	Wages from occupation.	Extras.	Total.	Clothing.	Board and lodging.	Total.	
		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Females over 16.—*Con.*:										
Stratford	29	58.45	273.07	212 90	5 51	218 41	48 75	133 94	194 79	23 62
Toronto	40	54.03	259.33	216 71	.....	216 71	67 31	126 36	214 28	2 43
The Province	255	57.18	271.09	206 22	1 20	207 42	53 93	116 14	183 42	24 00
Females under 16:										
Cobourg	2	60.00	298.50	149 25	....	149 25	17 50	104 00	134 00	15 25
Hamilton	1	60.00	240.00	80 00	.....	80 00	20 00	60 00	80 00	....
Ottawa	3	60.00	271.33	126 67	.....	126 67	15 33	104 00	124 67	2 00
Peterborough	1	54.00	300.00	104 00	.....	104 00	20 00	75 00	95 00	9 00
St. Catharines	2	60.00	259.00	108 75	8 00	116 75	21 50	.....	116 75	.....
The Province	9	59.33	279.89	120 00	1 78	121 78	18 89	93 57	116 72	5 06
Males under 16:										
Berlin	1	69.00	312.00	104 00	4 00	108 00	38 00	104 00	142 00	-34 00
Brantford	2	59.00	250.00	125 00	.....	125 00	25 00	100 00	125 00	.....
Cobourg	2	60.00	300.00	150 00	.....	150 00	.....	.....	150 00	.....
London	1	72.00	365.00	193 45	.....	193 45	30 00	132 00	194 00	-0 55
St. Catharines	6	60.00	289.83	118 25	.....	118 25	25 67	86 67	114 17	4 08
Stratford	5	56.40	298.20	110 00	.....	110 00	15 00	95 00	110 00	.....
The Province	17	60.06	294.53	123 94	0 23	124 17	25 17	95 50	124 76	0 59
All Classes:										
Aylmer	16	58.25	263 00	276 32	5 32	281 64	54 69	128 14	204 91	76 73
Barrie	66	59.82	299.32	367 14	.....	367 14	44 58	155 95	211 35	155 79
Berlin	25	59.76	276.88	290 72	0 16	290 88	56 24	134 26	225 16	65 72
Bowmanville	26	58.04	284.19	385 32	1 77	387 09	82 88	146 81	270 08	117 01
Brantford	68	58.76	268.63	288 66	1 10	289 76	57 66	141 18	212 38	77 38
Brockville	76	60.21	282.91	345 46	2 11	347 57	92 50	148 89	273 58	73 99
Carleton Place	15	66.53	298 27	307 80	0 73	308 53	61 38	155 33	268 17	40 36
Chatham	14	61.36	275.57	339 57	2 50	342 07	65 00	156 00	256 57	85 50
Cobourg	26	59.81	292.85	275 14	0 38	275 52	31 59	138 06	190 96	84 56
Collingwood	23	61.30	262.96	344 37	0 87	345 24	73 24	153 13	259 75	85 49
Cornwall	10	61.80	255.70	377 88	4 20	382 08	63 00	173 30	298 18	83 90
Galt	13	58.85	246.00	324 25	5 77	330 02	45 20	143 33	233 28	96 74
Gananoque	23	55.57	250 87	245 42	3 96	249 38	46 38	109 17	180 91	68 47
Guelph	31	58.90	281.29	374 03	.....	374 03	52 22	156 04	255 10	118 93
Hamilton	54	57 67	258.37	311 17	1 44	312 61	64 64	149 04	254 63	57 98
Kingston	27	62.70	257.56	247 15	3 70	250 85	49 12	141 04	208 96	41 89
Lindsay	26	62.04	262.31	305 61	5 19	310 80	65 88	160 79	267 02	43 78
Listowel	38	60 95	290.82	325 69	1 32	327 01	63 82	134 69	238 21	88 80
London	76	57.00	276.14	272 63	4 71	277 34	53 82	140 20	229 17	48 17
Orillia	9	59.44	277.33	378 72	.....	378 72	62 78	179 56	269 02	109 70
Oshawa	9	57.44	267.89	459 78	.....	459 78	75 00	186 33	331 89	127 89
Ottawa	69	58.88	253.36	261 81	0 90	262 71	45 14	154 06	224 08	38 63
Owen Sound	20	60.50	253.20	408 13	23 15	431 28	80 38	153 63	339 55	91 73
Perth	37	58.46	251.43	330 74	2 27	333 01	50 26	145 86	248 16	84 85
Peterborough	25	56.16	276.40	319 26	.....	319 26	64 60	134 96	237 72	81 54
Petrolea	4	60.00	299.50	504 25	12 50	516 75	92 50	183 00	327 50	189 25
Preston	16	59.38	260.75	309 09	5 13	314 22	48 43	144 87	226 88	87 34
St. Catharines	57	58.67	261.60	266 56	2 07	268 63	55 83	146 50	245 13	23 50
St. George	3	60.00	289.33	311 67	.....	311 67	36 67	144 00	203 09	108 67
St. Thomas	11	62.00	295 45	378 75	....	378 75	55 50	180 55	291 09	87 66
Stratford	137	58 66	280.55	303 59	6 06	309 65	64 68	155 26	267 18	42 47
Toronto	204	57.15	264.60	357 20	1 08	358 28	70 41	172 64	308 87	49 41
Waterloo	5	57.60	275.00	269 20	6 00	275 20	40 00	131 20	224 00	51 20
Whitby	13	59.85	262 31	332 60	9 23	341 83	61 92	150 31	295 42	46 41
Woodstock	5	59.60	287.80	449 72	1 20	450 92	71 75	174 80	334 60	116 32
The Province	1277	58.87	271.53	320 79	2 70	323 49	61 54	152 33	255 53	67 96

YEARLY TIME EMPLOYED AND WAGES EARNED.

TABLE VI.—Showing by localities the averages of yearly time employed and wages earned in 1889 by all male workers over 16 years and by all classes of workers.

Localities.	Total male workers over 16.						All classes of workers.					
	No. of returns.	Hours per week.	Days in year.	Wages from occupation.	Average daily rate.	Extra earnings of self.	No. of returns.	Hours per week.	Days in year.	Wages from occupation.	Average daily rate.	Extra earnings of self.
		No.	No.	$ c.	$ c.	$ c.		No.	No.	$ c.	$ c.	$ c.
Aylmer	68	59.82	263.35	374 78	1 42	11 22	73	59.51	262.90	361 48	1 37	10 46
Barrie	153	59.33	292.88	386 22	1 32	4 03	156	59.34	293.23	382 25	1 30	3 96
Berlin	46	58.72	269.17	387 44	1 44	4 35	56	58.68	270.46	351 77	1 30	3 64
Bowmanville	100	56.78	284.89	424 10	1 49	3 18	100	56.78	284.89	424 10	1 49	3 18
Brantford	94	59.46	275.14	368 87	1 34	3 75	106	59.10	271.61	346 86	1 28	3 33
Brockville	172	61.95	279.30	466 33	1 67	5 58	198	61.59	281.39	437 65	1 56	4 85
Carleton Place	52	64.33	290.46	388 60	1 34	3 29	52	64.33	290.46	388 60	1 34	3 29
Chatham	106	61.91	270.97	445 92	1 65	7 52	107	61.84	270.54	442 87	1 64	7 45
Cobourg	53	59.60	287.42	427 83	1 49	3 28	69	59.70	290.07	376 30	1 30	2 52
Collingwood	49	63.14	230.73	339 68	1 47	18 43	54	63.07	233.13	335 58	1 44	16 72
Cornwall	48	61.29	263.33	399 93	1 52	6 76	48	61.29	263.33	399 93	1 52	6 76
Galt	52	58.19	257.79	403 67	1 57	7 06	52	58.19	257.79	403 67	1 57	7 06
Gananoque	44	58.02	256.43	396 98	1 55	14 77	54	57.35	258.13	365 98	1 42	12 04
Guelph	164	60.34	282.57	483 14	1 71	2 27	168	60.33	282.33	477 11	1 69	2 21
Hamilton	208	57.21	244.58	391 27	1 60	8 04	226	57.41	248.64	380 07	1 53	7 40
Kingston	66	61.45	249.21	292 09	1 17	11 02	68	61.62	247.62	286 97	1 16	13 63
Lindsay	85	62.84	270.59	371 57	1 37	3 02	87	62.55	269.11	365 70	1 36	3 07
Listowel	67	61.64	284.48	369 07	1 30	4 48	74	61.49	284.59	355 77	1 25	4 05
London	201	57.31	274.74	367 06	1 34	11 35	224	57.09	274.93	348 06	1 27	11 36
Orillia	33	58.51	245.12	399 38	1 63	11 97	33	58.51	245.12	399 38	1 63	11 97
Oshawa	43	57.23	275.07	483 81	1 76	10 58	43	57.23	275.07	483 81	1 76	10 58
Ottawa	248	59.68	254.28	428 08	1 68	1 43	287	59.67	255.07	393 11	1 54	1 24
Owen Sound	46	60.57	264.78	398 83	1 51	13 11	46	60.57	264.73	398 83	1 51	13 11
Perth	121	59.55	260.12	394 38	1 52	3 06	125	59.32	259.77	386 75	1 49	2 96
Peterborough	56	58.14	274.88	433 55	1 58	2 86	64	57.44	277.63	401 35	1 45	2 50
Petrolea	10	59.60	300.40	536 25	1 79	15 00	10	59.60	300.40	536 25	1 79	15 00
Preston	32	59.28	255.94	340 67	1 33	4 75	34	59.32	258.09	333 63	1 29	4 47
St. Catharines	184	60.64	263.58	406 37	1 54	6 89	209	60.42	264.72	378 41	1 43	6 61
St. George	9	57.78	260.00	354 17	1 36	10 33	9	57.78	260.00	354 17	1 36	10 33
St. Thomas	56	64.27	312.29	440 15	1 41	4 20	56	64.27	312.29	440 15	1 41	4 20
Stratford	276	58.47	286.98	422 60	1 47	6 18	312	58.43	285.56	396 96	1 39	6 18
Toronto	442	57.66	266.09	436 37	1 64	2 98	486	57.33	265.26	416 74	1 57	2 71
Waterloo	31	62.26	265.35	313 48	1 18	12 65	31	62.26	265.35	313 48	1 18	12 65
Whitby	46	59.13	276.41	413 17	1 49	9 13	46	59.13	276.41	413 17	1 49	9 13
Woodstock	51	60.63	283.73	479 58	1 69	6 49	51	60.63	283.73	479 58	1 69	6 49
The Province	3,512	59.47	270.47	411 81	1 52	5 87	3,814	59.32	270.62	395 18	1 46	5 62

YEARLY WAGES AND COST OF LIVING—BY OCCUPATIONS.

TABLE VII.—Showing by occupations the averages of time employed, yearly earnings and cost of living for the year 1889 based on the returns of 3,814 workpeople, collected in 39 towns and cities of Ontario, classified by sex and age and with or without dependents.

Occupations.	No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Cost of living.	Surplus or deficit (—).
Males over 16.		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Agent	3.50	60.00	303.50	540 00	20 00	60 00	620 00	618 00	2 00
Agricultural hand implement maker	3.47	54.53	257.27	491 88	6 60	....	498 48	472 46	26 02
Apprentice	.....	59.07	287.01	180 77	2 23	.....	183 00	175 33	7 67
Axe maker	2 75	50.00	259.25	609 30	13 75	.....	623 05	505 94	117 11
Bag maker (paper)	.....	57.00	300.00	450 00	....	....	450 00	429 25	20 75
Baker	3.73	68.27	302.42	465 93	2 27	5 18	473 38	447 60	25 78
	.....	60.00	304 80	405 20	3 40	.....	408 60	288 84	119 76
Barber	3.36	70.43	289.29	454 20	11 71	13 29	479 20	454 90	24 30
	.....	70.50	298.58	391 92	2 08	.....	394 00	318 28	75 72
Blacksmith	3.75	58.76	278.51	445 32	1 77	8 89	455 98	422 56	33 42
	.....	59.22	273.91	406 80	.....	.....	406 80	302 94	103 86
Blacksmith's helper	3.00	57.11	273.79	327 65	5 66	7 79	341 10	351 27	-10 17
	.....	58.43	261.14	269 33	0 95	.....	270 28	242 77	27 51
Boat builder	2.67	57.50	276.33	535 36	29 83	...	565 19	477 70	87 49
Boiler maker	4.11	56.32	279.68	470 10	2 10	24 00	496 20	470 23	25 97
	.....	57.25	287.50	577 50	.....	.....	577 50	493 00	84 50
Boilermaker's helper	2.20	57.40	271.40	294 88	...	....	294 88	295 12	-0 24
	.....	56.50	280.25	271 63	....	.....	271 63	261 75	9 88
Bolt maker	2.00	59.50	250.50	463 33	...	.....	463 33	359 90	103 43
Bookbinder	4.60	54.00	266.40	488 87	15 00	....	503 87	527 29	-23 42
	.....	54.63	256.13	389 80	....	....	389 80	329 89	59 91
Bookkeeper	3.64	57.71	298.14	694 79	14 86	.....	709 65	580 36	129 29
	.....	54.75	300.75	469 50	0 70	.....	470 20	354 37	115 83
Boot and shoe factory:									
Cutter	3.50	53 75	292.75	531 50	37 50	31 25	600 25	520 75	79 50
	.....	53.60	293.80	511 85	.....	.....	511 85	360 29	151 56
Finisher	4.20	58.40	269.80	492 20	.....	56 00	548 20	485 42	62 78
	.....	56.20	270.40	383 52	.....	.....	383 52	297 92	85 60
Fitter	3.00	55.50	261.00	383 75	.....	45 00	428 75	492 32	-63 57
Heeler	2.88	55.75	270.13	397 31	6 25	.....	403 56	382 37	21 19
Laster	3.48	54.38	262.77	383 76	.....	.....	383 76	401 76	-18 00
	.....	54.67	275.00	444 00	.....	.....	444 00	369 47	74 53
Last maker	2 00	55.00	276.00	460 00	.....	.....	460 00	460 00	.....
Machine operator	2.75	55.75	271.50	422 50	4.50	.....	427 00	466 15	-39 15
Sewer	....	54.00	235.00	333 00	...	....	333 00	302 20	30 80
Trimmer	4.20	55.40	273.20	418 00	....	90 00	508 00	505 32	2 68
Various	3.45	55.45	269.00	359 61	15 98	10 00	385 59	396 07	-10 48
	.....	53.60	287.80	379 59	.....	.....	379 59	313 32	66 27
Bottler	.....	60.00	273.00	273 00	.....	....	273 00	246 00	27 00
Brass finisher	2.90	57.30	301.40	517 76	.....	20 00	537 76	499 01	38 75
	....	56.00	302.60	361 00	...	.....	361 00	355 00	6 00
Brewer	2.33	60.00	306.67	618 33	...	.....	618 33	548 67	69 66
Bricklayer	4.49	56.60	199.65	491 09	4 11	11 75	506 95	446 80	60 15
	...	56.15	175.23	435 38	6 31	.....	441 69	299 89	141 80
Brickmaker	3.86	58.71	144.71	201 50	73 57	16 43	291 50	294 86	-3 36
	.....	60.00	131.80	209 20	113 00	.....	322 20	319 40	2 80
Broom maker	5.00	54.00	209.33	272 86	.....	116 67	389 53	428 33	-38 80
	.....	52.67	272.67	313 34	.....	.....	313 34	232 93	80 41
Brush maker	4.50	57.63	287.25	471 90	.....	12 50	484 40	444 39	40 01
	.....	54.00	300.00	381 00	.....	.....	381 00	270 00	111 00
Butcher	4.22	69.89	295.22	415 22	.....	.....	415 22	398 22	17 00
	.....	71.67	259.67	268 00	.....	.....	268 00	227 67	40 33
Button maker	2.00	56 00	274.67	384 83	3 33	.....	388 16	339 38	48 78
Cab driver	2.78	83.33	335 22	384 56	.....	....	384 56	394 06	-9 50
Cabinet maker	3.40	57.72	278.30	448 93	2 54	10 60	462 07	419 06	43 01
	.....	58.29	284.00	397 13	0 21	.....	397 34	291 84	105 50
Caretaker	3.50	62.00	335.75	401 25	51 25	.....	452 50	403 82	48 68
Carpenter	3.77	57.32	257.47	426 63	7 41	12 37	446 41	408 83	37 58
	.....	57.45	248.76	382 32	4 85	.....	387 17	269 27	117 90

TABLE VII.—YEARLY WAGES AND COST OF LIVING.—*Continued.*

Occupations.	No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Cost of living.	Surplus or deficit (—).
		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Carpet factory operative	3.67	59.56	262.56	395 72	... ..	25 22	420 94	443 00	-22 06
	.....	60.00	192.00	233 50	.....	.....	233 50	248 00	-14 50
Carriage trimmer	3.55	58.18	248.55	419 22	34 09	20 00	473 31	409 45	72 86
	.....	60.00	227.25	397 63	.....	.....	397 63	305 63	92 00
Carter	6.00	57.33	301.67	352 33	.....	42 33	394 66	390 00	4 66
	.....	59.25	263.25	249 38	2 50	.....	251 88	209 50	42 38
Carver	3.50	57.83	286.33	552 88	.....	.....	552 88	493 22	59 66
	.....	59.33	281.67	493 33	.....	.....	493 33	314 33	179 00
Casemaker	2.86	58.57	298.57	558 71	.....	.....	558 71	526 43	32 28
	..	54.00	303.00	524 30	.....	.....	524 30	367 50	156 80
Cellarman	4.67	60.00	303.33	393 33	....	.....	393 33	328 50	64 83
Chair maker	3.13	56.13	260.38	423 20	28 13	3 00	454 33	374 94	79 39
	.....	57.20	278.20	277 75	5 00	.....	282 75	205 20	77 55
Cigar maker	3.16	50.00	265 37	374 05	0 79	31 37	406 21	418 24	-12 03
	.....	51.57	243.74	307 40	0 61	.....	308 01	268 42	39 59
Clerk (office)	2.00	55.00	292.00	498 33	.....	.....	498 33	480 73	17 60
	.	60.00	303.50	302 38	.....	.....	302 38	250 65	51 73
Confectioner	3.25	68.25	292.75	523 26	.....	13 00	536 26	466 59	69 67
Cooper	3.54	58.63	266.13	382 80	3 75	18 75	405 30	378 16	27 14
	...	59.60	293.90	369 30	.....	.....	369 30	290 85	78 45
Coremaker	4.75	60.00	277.00	343 75	2 00	68 50	414 25	447 50	-33 25
Cotton mill employe:									
Beamer	3.00	60.00	259.00	440 00	.....	.....	440 00	440 00	.....
	.....	60.00	265.00	440 00	.....	.....	440 00	324 00	116 00
Card helper	.....	60.00	286.00	279 33	.....	.....	279 33	255 33	24 00
Dyehouse hand	3.75	57.50	287.50	362 63	25 00	15 00	402 63	409 00	-6 37
Spinner	2.50	58.25	296.00	392 56	.....	12 50	405 06	374 35	30 71
Weaver	2.00	60.00	272.50	346 00	.....	.....	346 00	299 09	46 91
	.....	59.60	282.60	254 50	.....	.....	254 50	208 20	46 30
Various	3.56	59.89	285 89	415 17	7 78	27 78	450 73	420 64	30 09
	.....	60.00	293.60	313 96	.....	.....	313 96	261 40	52 56
Deliveryman	3.13	68.75	272.00	354 34	3 13	19 50	376 97	361 01	15 96
	.....	68.67	294.17	310 42	.....	.....	310 42	243 97	66 45
Driller	4.00	58.00	240.00	261 72	16 38	32 00	310 10	328 18	-18 08
	.....	60.00	276.67	347 67	.....	.....	347 67	250 33	97 34
Electrician	.....	60.00	313.00	833 33	.....	....	833 33	360 00	473 33
Electric light trimmer	4.00	70.00	339.00	500 00	.....	...	500 00	515 00	-15 00
	.	61.67	328.33	363 33	.....	.....	363 33	232 88	130 45
Electrotyper	.....	56.00	242.00	629 00	.....	.....	629 00	438 50	190 50
Engineer (stationary)	3.90	65 10	293.67	429 41	3 53	10 24	443 18	402 59	40 59
	....	59.63	291.00	420 88	....	.....	420 88	308 38	112 50
Finisher (wood)	3.29	58.36	268 00	454 35	1 79	10 71	466 85	450 73	16 12
	.....	59 33	276.33	434 43	2 78	....	437 21	306 96	130 25
Fireman (general)	3.65	66.65	274.12	349 06	8 82	40 06	397 94	371 26	26 68
	.....	70.00	251.00	270 20	29 00	.....	299 20	224 60	74 60
Fisherman	4.33	82.33	202.33	279 67	20 00	.....	299 67	374 50	-74 83
Flax mill employe	2.67	60.00	296.67	366 67	25 00	.....	391 67	316 67	75 00
	.....	60.00	294.00	353 33	.....	.....	353 33	255 00	98 33
Foreman:									
Blacksmith	5.67	59.67	305.67	735 83	.....	....	735 83	515 67	220 16
Bookbinder	2.50	55.00	306.50	587 50	.....	.....	587 50	520 50	67 00
Cabinet maker	5.00	59.50	287.50	650 00	.....	.....	650 00	527 00	123 00
Carpenter	4.00	59.67	302.00	613 00	.....	.....	613 00	464 17	148 83
Cotton mill	3.00	60.00	309 50	843 75	.....	.....	843 75	437 38	406 37
Harness maker	4.33	59.00	289.33	614 67	.. ..	..	614 67	507 00	107 67
Machinist	4.50	55.67	294.50	715 42	.....	25 00	740 42	576 00	164 42
Marble works	5.67	59.00	271.33	798 67	....	20 00	818 67	619 00	199 67
Miller	4.33	60.00	300.00	760 00	...	.....	760 00	582 67	177 33
Moulder	5.00	57.60	246.00	694 00	8 00	30 00	732 00	652 00	80 00
Painter	4.33	59.67	244.00	610 00	.....	.....	610 00	559 27	50 73
Piano and organ factory	3.33	58.67	302.00	811 33	.....	.....	811 33	602 33	209 00
Railway (section)	6.00	60.40	288.00	475 00	.....	.....	475 00	460 25	14 75
Tinsmith	3.33	58.67	270 67	585 33	....		585 33	540 67	44 66
Various	3.75	61.25	270 25	812 50	.....	37 50	850 00	671 00	179 00

TABLE VII.—YEARLY WAGES AND COST OF LIVING.—*Continued.*

Occupations.	No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Cost of living.	Surplus or deficit (—).
		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Gardener	3.50	63.50	244.67	310 83	40 17	13 33	364 33	334 67	29 66
	.....	60.00	281.75	273 75	....	.....	273 75	196 00	77 75
Gas stoker	3.83	70.00	325.17	443 67	....	.....	443 67	414 83	28 84
Gilder	2.00	54.00	289.50	434 16	.....	.....	434 16	438 25	-4 09
	.	54.00	273.50	492 30	.....	.....	492 30	418 40	73 90
Glove maker	2.75	59.00	285.00	525 00	.....	.....	525 00	404 50	120 50
	.....	60 00	291.50	366 00	...	.....	366 00	236 50	129 50
Grain shoveller	4.71	61.43	178.29	264 76	30 01	16 43	311 20	376 70	-65 50
Harness maker	3.25	59.63	279.78	416 63	7 99	20 94	445 56	402 96	42 60
	..	59 77	300.08	399 58	0 46	.....	400 04	269 88	130 16
Laborer (builder's)	3.62	54.92	202.87	295 49	29 59	36 69	361 77	356 24	5 53
	.....	57.11	214.22	317 64	11 11	.....	328 75	271 61	57 14
" (general)	3.71	59.94	259.43	302 60	7 00	30 26	339 86	343 07	-3 21
	.....	58.88	251.13	263 63	5 04	.....	268 67	229 36	39 31
Lamplighter	3.00	46.67	333.33	406 67	....	.....	406 67	351 00	55 67
Lather	3.00	48.40	184 20	376 19	36 00	.....	412 19	397 88	14 31
Lumber mill employe :									
Culler	2.67	61.67	181.00	280 00	73 33	.....	353 33	365 00	-11 67
Gate hand	4.67	66.00	213.00	276 67	12 00	34 33	323 00	343 67	-20 67
Piler	4.33	66.00	224.00	316 83	.....	16 00	332 83	343 00	-10 17
Yard hand	4.00	66.00	232.67	291 87	12 00	16 00	319 87	330 00	-10 13
Various	4.00	61.67	205.33	349 67	10 00	.....	359 67	307 33	52 34
	.....	66.00	195 33	268 00	....	.....	268 00	251 33	16 67
Machine hand	3.76	57.44	277.02	393 02	6 11	19 84	418 97	389 32	29 65
	.....	56 59	279.76	366 36	.....	.....	366 36	265 57	100 79
Machinist	3.56	56.77	276 94	479 34	7 38	5 97	492 69	451 37	41 32
	.....	58.26	276.08	436 33	3 08	....	439 41	321 06	118 35
Machinist's helper	3.14	52.86	279.86	323 29	...	11 43	334 72	333 51	1 21
Malt house hand	5.14	70 29	303.14	446 93	....	....	446 93	457 54	-10 61
Marble cutter	4.40	59.00	272.87	482 60	3 52	13 60	499 72	434 35	65 37
	..	56.10	299 40	456 46	.....	...	456 46	368 24	87 22
Marble polisher	3.90	59.20	277.70	385 67	10 00	20 00	415 67	411 13	4 54
	.....	60.00	266.00	433 00	.....	.....	433 00	316 50	116 50
Mat factory operative	4.00	58.80	273.00	322 60	.....	22 00	344 60	297 86	46 74
	.....	57.50	257.00	219 00	5 00	.....	224 00	190 75	33 25
Melter	3.67	57.83	269 17	442 83	11 67	.....	454 50	397 67	56 83
Miller	3.62	62.15	288.08	468 77	7 69	.....	476 46	431 23	45 23
	.....	63.33	286.25	415 01	.....	.....	415 01	311 71	103 30
Millwright	2.86	59.43	290 71	492 24	.....	.....	492 24	418 29	73 95
	.....	60 00	307 00	435 00	.....	...	435 00	227 00	208 00
Miscellaneous, n. e. s	2.30	59.77	254.02	434 80	8 19	13 84	456 83	435 35	21 48
	.....	61.92	274 81	395 27	4 81	.....	400 08	320 62	79 46
Moulder	3.89	58.93	275.76	538 28	1 18	5 05	544 51	472 37	72 14
	....	58.46	263.69	452 19	58	.....	452 77	305 39	147 38
Moulder's helper	4.75	59 50	282.00	380 55	35 00	.....	415 55	422 00	-6 45
Oil r finer	1.33	60.00	304.33	600 33	...	....	600 33	459 71	140 62
Packer	3.33	60.94	278 61	380 08	5 00	8 33	393 41	364 89	28 52
	....	59.60	288.60	315 60	.....	.....	315 60	267 00	48 60
Painter	3.48	57.01	258.22	410 10	6 52	9 41	426 03	405 57	20 46
	.....	58.04	245.85	361 04	5 82	.....	366 86	273 00	93 86
Paper mill employe	1.80	72 00	272 40	425 85	.....	.....	425 85	401 73	24 12
Pattern maker	4.07	58.93	278.36	486 86	5 36	21 85	514 07	464 54	49 53
Piano and organ factory operative :									
Action maker	3.14	58.43	279.29	510 09	.....	.....	510 09	440 26	69 83
	.....	57.40	272.00	511 91	....	.....	511 91	437 51	74 40
Key maker	2.50	58.50	288.50	507 50	.....	.....	507 50	471 00	36 50
Organ tuner	3.80	54 40	282.00	827 00	.....	.....	827 00	649 00	178 00
Piano regulator	1.33	57 00	292.67	739 72	....	.....	739 72	765 72	-26 00
	...	56.50	277.00	563 25	.....	.....	563 25	402 50	160 75
Polisher	2.50	57 75	283.00	487 00	.....	3 00	490 00	390 63	99 37
	.....	56.50	272 00	491 50	.....	....	491 50	423 50	68 00
Rubber	4.00	56.67	298.00	500 38	.....	102 00	602 38	597 67	4 71
	.....	57.00	262.50	382 35	.....	.....	382 35	380 00	2 35
Sounding board maker	4.00	56.50	284.75	616 47	15 50	.....	631 97	572 21	59 76

TABLE VII.—YEARLY WAGES AND COST OF LIVING.—*Continued.*

Occupations.	No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Cost of living.	Surplus or deficit (—).
		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Piano and organ factory operative—Con.:									
Stringer	2.00	57.00	306.00	408 87	.....	.....	408 87	396 25	12 62
Varnisher	4.00	55.83	244.33	397 37	15 00	44 46	456 83	467 58	-10 75
Plasterer	3.29	56 12	268.94	449 47	5 88	9 12	464 47	415 56	48 91
	.....	53.00	197.13	479 03	2 88	.....	481 91	313 69	168 22
Plumber and gas-fitter	3.52	56.04	277 63	493 25	0 39	18 37	512 01	473 71	38 30
	.....	55.73	273.82	462 48	.....	.....	462 48	326 86	135 62
Porter	4.07	63.14	294.00	340 39	1 43	72 86	414 68	401 27	13 41
Press feeder	.....	48.00	228.00	242 67	.....	.....	242 67	314 00	-71 33
Pressman	3.29	57.93	281.00	496 76	16 79	.....	513 55	464 50	49 05
	.....	56.13	288.38	411 75	.....	.....	411 75	380 60	31 15
Printer	3.24	58.98	286.63	450 25	7 12	29 83	487 20	464 52	22 68
	.....	57.70	283.52	414 06	1 09	.....	415 15	345 30	69 85
Railway employe:									
Baggageman	2.33	60.00	295.33	444 67	.....	.....	444 67	382 67	62 00
Brakeman	2.60	66.80	289.80	484 53	4 50	17 90	506 93	465 75	41 18
	.....	62.40	305.20	499 30	.....	.....	499 30	405 20	94 10
Car builder	3.71	50.14	273.00	402 31	30 02	20 00	452 33	401 37	50 96
	.....	55.50	268 50	402 75	.....	.....	402 75	333 50	69 25
Car cleaner	2 67	63 33	333.33	380 17	20 00	.....	400 17	388 67	11 50
	.....	68.50	336.38	339 75	.....	.....	339 75	282 33	57 42
Car inspector	3.57	70.29	345.00	509 86	.....	.....	509 86	458 97	50 89
Car repairer	4.20	55.60	284.53	417 27	1.33	19 07	437 67	427 73	9 94
Car tapper	4.20	74.00	326.80	444 70	.....	.....	444 70	421 80	22 90
Conductor	3.30	72.70	291.50	686 92	.....	.....	686 92	533 10	153 82
Engineer	3.21	75.36	311 36	917 70	.....	7 14	924 84	720 57	204 27
Fireman	3.00	74.17	298.17	564 17	.....	.....	564 17	523 17	41 00
	.....	75.38	299.88	536 44	.....	.....	536 44	421 63	114 81
Section hand	2.50	62.50	286.25	344 63	.....	.....	344 63	359 25	-14 62
	.....	59.50	299 67	349 83	.....	.....	349 83	272 07	77 76
Signalman	3.50	84.00	360.00	395 50	.....	.....	395 50	394 50	1 00
	.....	87.50	352.50	386 50	.....	.....	386 50	248 00	138 50
Switchman	2.93	75.33	342.67	468 46	13 33	3 33	485 12	443 75	41 37
	.....	79.50	357.50	470 00	.....	.....	470 00	370 00	100 00
Wiper	4.33	67 67	343.67	393 40	.....	40 00	433 40	460 00	-26 60
	.....	68.14	321.86	291 86	.....	.....	291 86	305 29	-13 43
Yardman	2.86	76 43	355.14	591 20	.....	.....	591 20	497 13	94 07
Various	.....	62.50	260 50	296 83	12 50	.....	309 33	225 25	84 08
Rattan worker	4.00	59 00	259.00	417 99	35 00	45 33	498 32	474 93	23 39
	.....	59 67	268 33	251 37	.....	.....	251 37	231 33	20 04
Salesman	2 90	63.05	302.29	478 71	4 29	3 90	486 90	433 77	53 13
	.....	61.76	301.83	377 14	0 57	.....	377 71	270 05	107 66
Sash and door maker	4.50	54.00	266 50	377 50	.....	165 00	542 50	465 00	77 50
Sawyer	3.89	59 72	253.56	408 04	6 17	1 39	415 60	406 85	8 75
Scale maker	5.50	60.00	245.00	407 50	.....	65 00	472 50	455 00	17 50
Ship carpenter	4.67	59 89	203.89	393 17	12 89	50 00	456 06	417 00	39 06
	.....	60.00	255 00	325 00	.....	.....	325 00	229 00	106 00
Shipper	3.38	58.00	294.63	437 06	20 44	18 75	476 25	408 72	67 53
Shoddy mill operative	.....	60.00	215.00	220 00	41 00	.....	261 00	233 00	28 00
Shoemaker (custom)	3.56	59 45	266.38	387 66	6 67	13 08	407 41	396 67	10 74
	.....	59.89	268.32	347 12	10 53	.....	357 65	259 05	98 60
Stableman	4.00	66.40	302.40	321 30	.....	.....	321 30	325 80	-4 50
	.....	89.25	319.25	379 50	.....	.....	379 50	294 85	84 65
Stereotyper	.....	50.00	301.00	317 50	4 67	.....	322 17	292 90	29 27
Stone cutter	4.25	54 75	217 00	553 51	4 50	.....	558 01	526 21	31 80
	.....	55.50	213.00	486 93	.....	.....	486 93	374 84	112 09
Stone mason	4.22	58.49	197.30	470 48	6 22	9 13	485 83	433 69	52 14
	.....	59 33	202 56	465 39	12 22	.....	477 61	318 56	159 05
Stove foundry employe:									
Mounter	3.54	58.54	247 54	369 70	0 92	10 77	381 39	400 94	-19 55
Plater	4.80	59 60	262 00	523 00	.....	.....	523 00	480 80	42 20
Polisher	3.67	57 33	231 67	360 83	.....	.....	360 83	344 17	16 66
	.....	59 60	250.80	313 30	.....	.....	313 30	281 20	32 10
Various n. e. s	.....	60.00	246.67	387 67	.....	.....	387 67	306 33	81 34

TABLE VII.—YEARLY WAGES AND COST OF LIVING.—*Continued.*

Occupations.	No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Cost of living.	Surplus or deficit (—).
		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Street car driver	2.50	88.50	270.33	310 54	49 00	.....	359 54	348 24	11 30
	.....	72.00	227.00	339 50	.....	.....	339 50	330 50	9 00
Tailor shop employe:									
Cutter	4.22	56.33	287.44	764 89	.....	.....	764 89	607 41	157 48
Tailor	3.41	59.66	258.59	460 63	.....	26 18	486 81	437 21	49 60
	.....	58.69	266.93	408 60	1 72	.....	410 32	277 96	132 36
Tanner and currier	3.38	58.76	293.35	422 25	26 76	30 13	479 14	427 12	52 02
	.....	59.25	296.00	392 78	2 50	...	395 28	292 94	102 34
Teamster	4.15	64.10	302.40	369 69	7 55	12 13	389 37	369 62	19 75
	..	64.79	268.43	332 39	1 79	.....	334 18	254 84	79 34
Telegraph operator	3.50	76.00	365.00	467 50	.....	.....	467 50	450 25	17 25
Tinsmith	3.49	58.41	277.00	430 46	3 62	3 20	437 28	403 17	34 11
	....	58.94	276.88	367 19	.....	.....	367 19	270 79	96 40
Tobacco roller	3.57	55.00	258.57	425 93	6 00	.....	431 93	412 57	19 36
	....	55.00	225.00	350 00	.....	.....	350 00	285 00	65 00
Trunk maker	4.80	56.20	266.20	413 16	1 30	30 80	445 26	452 66	-7 40
Upholsterer	4.00	59.33	286.47	488 71	2 07	3 33	494 11	445 37	48 74
	....	57.80	276 00	409 52	9 02	....	418 54	310 49	108 05
Varnish maker	2.00	59.00	300 00	520 50	.....	.....	520 50	315 70	204 80
Wagon maker	5.50	60.00	300.00	450 00	12 50	50 00	512 50	498 75	13 75
Watchmaker	2.50	57.50	267.50	491 00	.....	.....	491 00	525 50	-34 50
	.....	60.00	300.00	600 00	.....	.....	600 00	475 00	125 00
Watchman	3.25	79.17	362.00	417 86	.....	....	417 86	361 48	56 38
Wheelmaker	3.67	59 07	266.00	337 10	19 07	6 67	362 84	362 40	0 44
	.....	54.50	216.00	254 04	12 60	.....	266 64	187 25	79 39
Wincey mill operative	.....	59.33	215.33	265 33	8 33	.....	273 66	214 00	59 66
Wood turner	4.10	58.35	270.30	471 30	2 00	2 50	475 80	425 20	50 60
	.....	54.50	278.00	485 00	.....	.....	485 00	285 00	200 00
Woodworker	3.44	56.87	279.90	453 10	10 69	3 33	467 12	402 84	64 28
	.....	54.30	259.20	371 21	1 00	.....	372 21	284 56	87 65
Woollen mill operative:									
Carder	4.50	60.75	280.25	601 25	..	10 00	611 25	426 25	185 00
Card helper	3.86	60.00	300.71	408 29	4 86	25 71	438 86	373 89	64 97
	....	60.00	275.00	208 40	.....	.....	208 40	176 00	32 40
Dyer	5.00	59.67	279.33	609 00	10 00	.....	619 00	542 00	77 00
Dye house hand	2.71	60.00	291.43	329 34	2 14	1 43	332 91	323 94	8 97
	...	60.00	302 00	332 20	.....	....	332 20	264 00	68 20
Finisher	4.00	59.67	281.00	581 83	20 00	.....	601 83	425 00	176 83
Finisher's helper	3.00	60.00	296.00	370 38	12 50	....	382 88	373 13	9 75
Loom fixer	5.00	59.67	299.33	479 77	15 48	66 67	561 92	462 20	99 72
	....	60.00	301.00	413 75	.....	.....	413 75	254 00	159 75
Spinner	4.00	59 67	278.00	541 87	16 67	.....	558 54	441 67	116 87
	....	57.00	266.00	356 00	.. ..	.....	356 00	236 50	119 50
Spinner's helper	3.20	58 46	273.80	339 20	.....	31 20	370 40	329 40	41 00
Warper	3.83	60.00	282.83	407 50	.. ..	16 67	424 17	385 33	38 84
	....	60.00	288.00	432 00	.....	....	432 00	246 00	186 00
Weaver	3.75	60 00	271.50	445 63	.....	7 00	452 63	393 50	59 13
Wool sorter	3.67	60.00	292.33	442 17	.....	66 33	508 50	353 00	155 50
	.....	60.00	306.00	382 50	...	.....	382 50	222 50	160 00
Various	3.67	59.17	293.67	379 62	11 67	16 67	407 96	374 89	33 07
	.....	57.00	280.50	281 30	.....	.....	281 30	225 00	56 30
Average for all occupations	3.61	59.55	270.19	434 19	6 95	14 36	455 50	420 52	34 98
	.....	59.28	271.18	355 30	3 13	.....	358 43	277 48	80 95
Males under 16 years.									
Various occupations	.....	60.06	294.53	123 94	0 23	.....	124 17	124 76	-0 59

TABLE VII.—YEARLY WAGES AND COST OF LIVING.—*Continued.*

Occupations.	No. of dependents.	Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total earnings.	Cost of living.	Surplus or deficit (—).
Females over 16 years.		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Bag maker		60.00	246.60	157 83	....	.....	157 83	160 83	-3 00
Bookbinder		52.60	284.40	208 74	.....	.....	208 74	220 60	-11 86
Book folder		54.43	277.14	173 82	....	.....	173 82	178 71	-4 89
Bookkeeper		58.50	300.00	293 75	....	.....	293 75	234 75	59 00
Box maker		54.00	258.29	192 92	.....	.....	192 92	168 18	24 74
Brush maker		53.00	296.33	176 67	6 26	....	182 93	170 57	12 36
Corset maker		57.60	288.00	176 80	.....	.....	176 80	169 98	6 82
Corset steel maker		54.00	270.00	157 83	.....	.....	157 83	131 33	26 50
Cotton mill employe :									
Slubber		60.00	295.00	260 33	.....	.....	260 33	177 00	83 33
Spinner		60.00	291.00	195 67	.....	.....	195 67	165 33	30 34
Warper		60.00	295.00	286 67	.....	.....	286 67	207 00	79 67
Weaver		60.00	286.50	216 00	.....	.....	216 00	216 00	.....
Various	2.50	60.00	300.00	315 00	.....	.....	315 00	318 25	-3 25
		60.00	296.67	241 00	.....	.....	241 00	188 33	52 67
Dressmaker	1.25	60.00	261.00	210 45	52 00	.....	262 45	301 50	-39 05
		58.52	268.76	199 27	.....	.....	199 27	184 06	15 21
Envelope maker		51.00	288.50	161 62	.....	.....	161 62	173 50	-11 88
Fur sewer		50.00	250.00	145 50	.....	.....	145 50	153 50	-8 00
Glove maker		60.00	291.67	234 72	.....	.....	234 72	217 33	17 39
Haircloth weaver		60.00	271.00	225 00	.....	.....	225 00	225 00	.....
Hame factory operative		56.00	277.50	211 25	.....	.....	211 25	140 00	71 25
Knitting mill operative		52.50	249.00	156 25	.....	.....	156 25	125 75	30 50
Laundrywoman	1.33	54.00	226.67	176 17	.....	.....	176 17	228 33	-52 16
Milliner		55.25	272.00	337 50	.....	.....	337 50	268 75	68 75
Miscellaneous n. e. s	2.25	56.75	224.50	161 13	17.50	47.50	226 13	231 43	-5 30
		60.00	224.33	207 42	1 66	.....	209 08	195 00	14 08
Packer		54.50	273.67	197 50	2 67	.....	200 17	194 98	5 19
Press feeder		56.00	270.33	141 62	6 66	.....	148 28	145 95	2 33
Printer		54.00	257.00	423 60	.....	.....	423 60	336 00	87 60
Rag sorter		60.00	168.33	83 33	53 33	.....	136 66	141 66	-5 00
Rattan worker		57.00	228.00	133 79	.....	.....	133 79	154 00	-20 21
Saleswoman		60.50	296.50	230 83	.....	.....	230 83	199 20	31 63
Shirt maker		57.00	271.33	174 33	.....	.....	174 33	165 78	8 55
Shoe factory operative		56.00	267.71	173 69	7 57	.....	181 26	152 20	29 06
Tailoress	2.67	60.00	292.00	316 50	34 33	26 00	376 83	368 83	8 00
		55.94	259.80	235 44	0 15	.....	235 59	199 25	36 34
Woollen mill operative :									
Card helper		60.00	271 33	142 25	.....	.....	142 25	145 33	-3 08
Finisher's helper		60.00	272.00	146 89	.....	.....	146 89	136 50	10 39
Piecer		60.00	278.71	150 56	.....	.....	150 56	147 39	3 17
Spinner's helper		60.00	300.00	127 50	.....	....	127 50	127 50	
Spooler		60.00	272.40	148 15	.....	....	148 15	143 40	4 75
Weaver		60.00	289.08	222 06	....	.....	222 06	185 51	36 55
Various		60.00	298.33	160 88	.....	.....	160 88	151 50	9 38
Average for all occupations	2.10	58.52	265.43	246 37	23 05	16 48	285 90	300 13	-14 23
		57.18	271.09	206 22	1 20	.....	207 42	183 42	24 00
Females under 16 years.									
Various occupations		59.33	279.89	120 00	1 78	.....	121 78	116 72	5 06

YEARLY TIME EMPLOYED AND WAGES EARNED.

TABLE VIII.—Being a supplement to Table VII, showing the time employed and yearly wages of certain occupations, subdivided for other purposes in the preceding table into workers with and without dependents.

Occupations.	Hours per week.	Days in year.	Yearly wages.	Extras of self.
Males over 16.	No.	No.	$ c.	$ c.
Baker	66.74	302.85	454 69	2 48
Barber	70.46	293.58	425 45	7 27
Blacksmith	58.86	276.34	435 16	1 35
Blacksmith's helper	57.67	268.37	302 65	3 64
Boilermaker	56.48	281.04	488 77	1 74
Boilermaker's helper	57.00	275.33	284 54	.....
Bookbinder	54.38	260.08	427 91	5 77
Bookkeeper	56.64	299.09	612 86	9 71
Boot and shoe factory:				
Cutter	53.67	293.33	520 58	16 67
Finisher	57.30	270.10	437 86	.....
Laster	54.44	265.06	395 06	.....
All sub-occupations	55.11	272.01	411 53	5 47
Brass finisher	57.00	301.54	481 59	.....
Bricklayer	56.51	194.99	480 44	4 53
Brickmaker	59.25	139.33	204 71	90 00
Broommaker	53.33	241 00	293 10	.....
Brushmaker	56.90	289.80	453 72	.....
Butcher	70.33	286.33	378 42	.....
Cabinet maker	57.89	280.89	433 80	1 66
Carpenter	57.66	257.31	420 81	6 97
Carpet factory employé	61.45	249.73	366 23	.....
Carriage trimmer	58.82	242 82	414 05	22 06
Carter	58.14	279.71	293 50	.....
Carver	58 33	284.78	533 03	.....
Casemaker	57.56	299.56	551 07	.....
Chair maker	56.54	267.23	367 26	19 23
Cigar maker	50.86	253.52	339 69	0 69
Clerk (office)	57.86	298.57	386 36	.....
Cooper	58.91	274.29	378 83	2 65
Cotton mill employé:				
Beamer	60.00	262.00	440 00	.....
Weaver	59.71	279.71	280 64	.....
All sub-occupations	59.40	288.26	358 88	6 18
Deliveryman	68.71	281.50	335 52	1 79
Driller	57.20	262.00	313 29	6 55
Electric light trimmer	65.00	332.60	418 00	.....
Engineer (stationary)	64.36	293 31	428 25	3 05
Finisher (wood)	58.74	271.26	446 56	2 17
Fireman (general)	67.41	268.86	331 14	13 41
Flax mill employé	60.00	295.33	360 00	12 50
Foreman	58.82	283.60	682 73	0 80
Gardener	62.10	259 50	296 00	24 10
Gilder	54 00	281.50	463 23	.....
Glove maker	59.33	287.17	472 00	.....
Harness maker	59.68	286.00	408 29	5 57
Laborer (builder's)	55.33	205.00	237 14	26 13
Laborer (general)	59.73	257.77	294 80	6 61
Lumber mill employé:				
All sub-occupations	64.56	208.56	297 17	17 89
Machine hand	57.21	277.77	385 71	4 44
Machinist	57.08	276.60	467 86	6 23
Marble cutter	58.25	279.50	476 07	2 64
Marble polisher	59.33	275.75	393 56	8 33
Mat factory operative	58.43	268.43	293 00	.....
Miller	62.72	287.20	442 97	4 00
Millwright	59.50	292.75	485 08	.....
Moulder	58.84	273.46	521 75	1 07
Packer	60.65	280.78	366 06	3 91
Painter	57.37	254.13	394 65	6 26
Piano and organ factory operative:				
Action maker	58.00	276.25	510 85	.....
Piano regulator	56.80	286.40	669 13	.....
Polisher	57.33	279.33	488 50	.....
Piano and organ factory operative—*Con.*				
Rubber	56.86	277.71	432 93	.....
All sub-occupations	56.86	277.10	525 81	2 98
Plasterer	55.12	205.16	458 93	4 92
Plumber and gas fitter	55.95	276.53	484 87	0 28
Pressman	57.27	283.68	465 85	10 68
Printer	58.52	285.52	437 24	4 95
Railway employé				
Brakeman	65.33	294.93	489 45	3 00
Car builder	51.22	272.00	402 41	23 35
Car cleaner	67.09	335.55	350 77	5 45
Fireman	74.86	299.14	548 32	.....
Section hand	61.21	292.00	346 86	.....
Signalman	85.75	356.25	391 00	.....
Switchman	75.82	344.41	468 64	11 76
Wiper	68.00	328.40	322 32	.....
All sub-occupations	68.49	311.61	500 71	3 85
Rattan worker	59.33	263.67	334 68	17 50
Salesman	62.25	302.00	415 23	1 96
Ship carpenter	59.91	213.18	380 77	10 55
Shoemaker (custom)	59.55	266 82	378 38	7 55
Stableman	76.56	309.89	347 17	.....
Stone cutter	54.88	216.33	542 41	3 75
Stone mason	58.65	198.33	469 48	7 39
Stove foundry employé				
Polisher	58.75	243.63	331 13	.....
All sub-occupations	58.93	248.86	387 35	0 41
Street car driver	84.38	259.50	317 78	36 75
Tailor (coat maker)	59.20	262.56	425 89	0 82
Tanner and currier	58.84	293.82	419 23	22 44
Teamster	64.28	293.59	360 02	6 06
Tinsmith	58.65	276.94	401 46	1 96
Tobacco roller	55.00	254.38	416 44	5 25
Upholsterer	58.68	282 28	457 03	4 85
Watchmaker	58 33	278.33	527 33	.....
Wheel maker	58.53	260.12	327 45	18 31
Wood turner	58.00	271.00	472 55	1 82
Woodworker	56.35	275.67	436 39	8 71
Woollen mill operative				
Card helper	60 00	290.00	325 00	2 83
Dye house hand	60.00	292.50	329 70	1 88
Loom fixer	59.80	300.00	453 36	9 29
Spinner	58 60	273.20	447 52	10 00
Warper	60.00	283.57	411 00	.....
Wool sorter	60.00	295.75	427 25	.....
All sub-occupations	59.64	285.80	406 76	4 48
Average for all occupations:				
1889	59.47	270.47	411 81	5 87
1888	58.38	269.41	425 12	4 41
1884-9	58.83	267.67	405 11	6 38
Females over 16.				
Cotton mill employe:				
All sub-occupations	60.00	294.78	257 94	.....
Dressmaker	58.76	267.52	201 06	8 32
Tailoress	56.28	262.52	242 29	3 04
Woollen mill operative				
All sub-occupations	60.00	285.69	185 00	.....
Average for all occupations:				
1889	57 28	270.66	209 28	2 86
1888	56.04	275.85	212 97	0 95
1884-9	57.53	274.58	198 59	1 57

YEARLY TIME EMPLOYED AND WAGES EARNED.

TABLE IX.—Showing by localities the averages of time employed and wages earned, together with extra earnings of worker outside of regular occupation for the chief trades or callings represented in the returns made by employés for the year 1889; also averages for the Province for 1888 and the six years 1884-9.

Occupations.	Hours per week.	Days in year.	Yearly wages.	Extras of self.
Males over 16 Years:	No.	No.	$ c.	$ c.
Action maker:				
Guelph	59.00	281.00	478 00	.....
Toronto	57.00	266.40	531 63	.....
Other places	58.00	289.00	541 00	.....
Average 1889	58.00	276.25	510 85	.....
Average 1888	58.00	275.38	428 09	.....
Average 1884-9	58.37	285.97	466 98	2 22
Apprentice (various) 1889	59.07	287.01	180 77	2 23
Apprentice (various) 1888	58.66	296.13	193 78	4 67
Apprentice (various) 1884-9	58.61	290.02	178 61	2 79
Baker:				
Brockville	60.00	313.00	447 20	.....
Guelph	84.33	307.33	518 00	.....
Hamilton	71.33	296.67	456 00	.....
London	69.00	287.50	402 25	4 25
Other places	63.25	304.17	459 13	4 17
Average 1889	66.74	302 85	454 69	2 48
Average 1888	62.53	289.74	469 55	0 27
Average 1884-9	63.79	292.72	429 68	1 85
Barber:				
London	70.80	283.80	477 91	2 80
Ottawa	67.00	276.25	395 69	....
Stratford	71.60	297.60	424 20	.....
Toronto	70.67	293.33	389 00	.....
Other places	71.11	293.44	422 39	19 44
Average 1889	70.46	293.58	425 45	7 27
Average 1888	68.14	288.36	449 93	.....
Average 1884-9	69.66	299.11	443 15	1 89
Blacksmith:				
Barrie	60.00	305.20	409 96	.....
Bowmanville	59.14	297.57	478 86	.....
Brockville	60.00	246 50	372 50	15 00
Chatham	59.75	264.17	433 33	.....
Cobourg	60.00	295.50	479 00	.....
Galt	57.50	288.75	500 00	.....
Gananoque	58.67	269.67	423 92	.....
Guelph	59.88	288.13	441 00	6 25
Hamilton	58.00	264.17	431 17	.....
Lindsay	60.60	291.50	423 43	.....
London	53.83	286.00	433 34	12 83
Orillia	59 00	265 60	403 60	.....
Oshawa	56.25	267.50	476 00	7 50
Ottawa	59.95	275.42	422 95	.....
Perth	59.17	275.42	456 88	.....
Peterborough	60.00	286.80	423 40	.....
St. Catharines	60.00	277.20	495 95	...
Stratford	53.11	285.00	435 56	2 78
Toronto	58.81	284.13	441 59	.....
Other places	59.31	264.77	388 57	.....
Average 1889	58.86	276 34	435 16	1 35
Average 1888	59.00	274.83	461 75	4 79
Average 1884-9	58.90	273 02	435 23	4 44
Blacksmith's helper 1889	57.67	268.37	302 65	3 64
Blacksmith's helper 1888	57.21	274.00	337 13	5 89
Blacksmith's helper 1884-9	57.47	269.06	315 38	5 02
Boat builder:				
Toronto	57.00	278.50	572 79	39 00
Other places	58.50	272.00	460 50	11 50
Average 1889	57.50	276.33	535 36	29 83
Average 1888	60.00	300.00	520 00	.....
Average 1884-9	59.28	291.63	459 20	22 21
Boilermaker:				
Ottawa	60.00	267.33	423 00	.....
Owen Sound	56.67	293.33	636 67	.....
Stratford	53.43	281.71	521 86	.....
Other places	57.50	281.00	440 98	4 00
Average 1889	56.48	281.04	488 77	1 74
Average 1888	55.40	277.50	547 40	4 00
Average 1884-9	57.25	263.59	477 16	1 47
Boilermaker's helper 1889	57.50	275.33	284 54	.....
Boilermaker's helper 1888	54.80	294.00	346 60	.....
Boilermaker's helper 1884-9	57.48	267.68	321 53	... .
Bookbinder:				
Toronto	54.89	265 67	462 96	8 33
Other places	53.25	247.50	349 03	.....
Average 1889	54.38	260.08	427 91	5 77
Average 1888	56.13	283.88	487 13	.....
Average 1884-9	55.26	275.73	491 09	10 24
Book-keeper:				
Brockville	51.00	302.60	570 00	20 00
Chatham	61.33	302.33	816 67	23 33
Stratford	59.80	291.60	754 00	2 40
Other places	57.00	300.22	490 33	3 51
Average 1889	56.64	299.09	612 86	9 71
Average 1888	55.43	299.14	593 79	17 14
Average 1884-9	56.82	298.25	579 83	11 62
Boot and shoe factory:				
Cutter 1889	53.67	293.33	520 58	16 67
Cutter 1888	54.00	260.00	373 33	.....
Cutter 1884-9	54.00	272.67	418 65	22 92
Finisher 1889	57.30	270.10	437 86	.....
Finisher 1888	59 00	267.50	267 50	.....
Finisher 1884-9	58.20	273.15	369 70	.....
Heeler 1889	55 75	270.13	397 31	6 25
Heeler 1888	55.67	281.00	341 33	.....
Heeler 1884-9	55.31	280.21	363 30	6 25
Laster 1889	54.44	265.06	395 06	.....
Laster 1888	55.20	258.40	324 60	.....
Laster 1884-9	54.99	265.03	357 67	.....
Trimmer 1889	55.40	273.20	418 00	.....
Trimmer 1888	.....	.....	.....	.....
Trimmer 1884-9	57.20	286.60	459 00	.....
Brass finisher:				
Toronto	56.45	301.82	478 24	.....
Other places	60.00	300.00	500 00	.....
Average 1889	57.00	301.54	481 59	.....
Average 1888	.....	.....	.....	.....
Average 1884-9	59.00	273.89	438 40	12 50

TABLE IX.—YEARLY TIME EMPLOYED AND WAGES EARNED—*Continued.*

Occupations.	Hours per week.	Days in year.	Yearly wages.	Extras of self.
	No.	No.	$ c.	$ c.
Bricklayer :				
Berlin	58.75	218.75	366 25	
Brockville	60.00	136.67	371 67	25 00
Guelph	59.00	243.75	623 75	
Hamilton	54.83	169.67	490 00	4 17
Listowel	60.00	159.25	363 00	
London	53.33	212.00	489 17	3 33
Ottawa	59.00	212.89	550 14	
Perth	60.00	199 67	566 67	
Peterborough	54.00	179.00	460 40	
Preston	58.33	179.33	387 00	24 00
St. Catharines	54.00	198.50	595 50	2 00
Toronto	50.00	178.43	505 86	
Whitby	60.00	200.00	466 67	
Other places	56.10	211.70	429 80	11 80
Average 1889	56.51	194.99	480 44	4 53
Average 1888	55.31	184.84	478 16	0 67
Average 1884-9	56.58	188.40	458 07	7 82
Brickmaker :				
Stratford	60.00	128.17	189 33	106 67
Other places	58.50	150.50	220 08	73 33
Average 1889	59.25	139.33	204 71	90 00
Average 1888	58.00	216.75	318 25	31 75
Average 1884-9	59.33	208.47	301 79	43 83
Broom maker 1889	53.33	241.00	293 10	
Broom maker 1888	53.20	284.20	433 00	
Broom maker 1887-9	53.95	268.40	375 59	
Brush maker :				
Hamilton	56.13	290.25	459 15	
London	60.00	288.00	432 00	
Average 1889	56.90	289.80	453 72	
Average 1888	58.25	267.50	437 50	
Average 1884-9	55.65	283.38	453 97	1 27
Butcher 1889	70.33	286.33	378 42	
Butcher 1888	66.40	284.90	395 00	10 00
Butcher 1884-9	63.64	292.13	397 12	8 33
Cabinet maker :				
Aylmer	57.00	290.00	402 33	
Barrie	60.00	305.25	416 75	
Bowmanville	56.92	276.54	424 27	1 23
Guelph	59.00	275.00	425 00	1 50
Hamilton	57.00	235.83	364 17	
Listowel	60.00	249.00	388 67	
London	53.00	285.60	435 58	2 00
Ottawa	60.00	275.75	493 29	
Owen Sound	60.00	282.00	473 50	
Stratford	58.67	297.33	456 56	10 56
Toronto	55.33	289.11	495 93	
Other places	59.62	289.85	416 85	
Average 1889	57.89	280.89	433 80	1 66
Average 1888	58.66	281.69	435 36	4 69
Average 1884-9	58.01	282.17	427 10	4 72
Carpenter :				
Aylmer	59.40	226.60	282 00	27 00
Barrie	60.00	268.00	338 30	
Berlin	59.50	256.25	368 88	
Bowmanville	59.25	293.00	420 50	
Brantford	59.25	261.38	444 31	3 13
Brockville	60.00	267.33	467 89	
Carleton Place	59.67	233.33	360 27	28 33
Chatham	58.33	220.00	367 67	56 67
Cobourg	59.60	271.40	406 10	
Galt	57.60	260.40	425 46	

Occupations.	Hours per week.	Days in year.	Yearly wages.	Extras of self.
	No.	No.	$ c.	$ c.
Carpenter—*Con.*				
Guelph	57.57	267.86	415 71	
Hamilton	56.46	232.54	436 35	4 62
Kingston	60.00	206.40	302 30	14 00
Lindsay	56.80	239.20	355 20	2 00
Listowel	56.00	285.00	425 00	
London	50.29	292.43	441 70	16 35
Orillia	56.00	261.83	425 00	16 67
Ottawa	60.00	233.58	390 77	
Owen Sound	60.00	249.80	390 00	8 00
Perth	58.36	242.64	385 14	5 64
Peterborough	55.00	284.67	455 17	
St. Catharines	58.60	253.60	459 20	24 00
St. Thomas	56.14	275.71	464 28	5 71
Stratford	54.00	272.86	441 43	
Toronto	49.42	262.75	533 13	
Woodstock	59.75	275.50	466 30	1 25
Other places	59.33	242.44	375 67	22 22
Average 1889	57.34	255.87	418 46	6 94
Average 1888	54.88	267.16	452 69	2 60
Average 1884-9	56.08	258.57	420 43	6 31
Carriage trimmer :				
Gananoque	56.75	262.25	464 85	
Toronto	60.00	214.50	429 00	
Other places	59.22	246.78	384 83	
Average 1889	58.82	242.82	414 05	22 06
Average 1888	57.73	271.82	451 59	
Average 1884-9	57.42	256.58	441 68	7 34
Carver :				
Guelph	59.00	288.75	525 00	
Other places	57.80	281.60	539 46	
Average 1889	58.33	284.78	533 03	
Average 1888	52.67	258.33	417 66	
Average 1884-9	56.27	282.36	510 55	7 50
Case maker :				
Toronto	56.20	301.60	585 52	
Other places	59.25	297.00	508 00	
Average 1889	57.56	299.56	551 07	
Average 1888	54.60	267.20	447 28	7 20
Average 1884-9	57.04	284.55	496 26	4 76
Chairmaker 1889	56.54	267.23	367 26	19 23
Chairmaker 1888	57.67	224.67	326 67	
Chairmaker 1884-9	55.98	254.92	347 85	6 83
Cigar maker :				
Barrie	54.00	307.00	337 50	
Brockville	54.00	218.75	325 00	
Hamilton	49.83	245.00	377 83	
Listowel	60.00	307.00	506 25	
St. Catharines	48.00	215.75	316 40	3 75
Toronto	44.50	253.25	340 63	
Waterloo	45.75	247.50	280 00	
Other places	54.25	246.00	276 82	1 75
Average 1889	50.86	253.52	339 69	0 69
Average 1888	53.47	289.20	462 60	
Average 1884-9	51.74	265.25	368 54	3 73
Confectioner 1889	68.25	292.75	523 26	
Confectioner 1888	59.00	304.00	437 50	
Confectioner 1884-9	60.86	283.80	458 35	1 43
Cooper :				
Guelph	51.67	296.67	396 67	
St. Catharines	60.00	257.67	333 33	13 33
Stratford	60.00	279.60	441 00	

TABLE IX.—YEARLY TIME EMPLOYED AND WAGES EARNED—*Continued.*

Occupations.	Hours per week.	Days in year.	Yearly wages.	Extras of self.
	No.	No.	$ c.	$ c.
Cooper—*Con.*				
Toronto	60.00	271.33	379 78	.....
Other places	60.93	267.64	358 32	3 57
Average 1889	58.91	274.29	378 83	2 65
Average 1888	56.26	266.87	358 83	0 52
Average 1884-9	58.38	265.04	367 89	5 50
Cotton mill operative 1889	59.40	288.26	358 88	6 18
Cotton mill operative 1888	60.60	257.00	329 50	1 74
Cotton mill operative 1884-9	60.07	267.71	353 71	4 04
Cutter (tailor's) 1889	56.33	287.44	764 89	.....
Cutter (tailor's) 1888	56.13	281.63	739 00	6 25
Cutter (tailor's) 1884-9	55.66	297.97	791 61	15 83
Engineer (stationary):				
Brockville	64.60	305.40	480 80	....
Chatham	69.00	276.00	419 80	.....
Guelph	71.50	293.75	492 50	.....
Lindsay	63.00	264.25	315 75	.....
Ottawa	61.67	292.00	555 00	....
St. Thomas	79.50	350.00	438 35	....
Stratford	63.00	293.00	366 67	.....
Toronto	57.75	307 88	510 50	1 25
Other places	62.40	283.45	391 43	8 50
Average 1889	64.36	293.31	428 25	3 05
Average 1888	64.15	283.24	412 72	7 56
Average 1884-9	63.73	290.72	430 16	5 80
Finisher (wood):				
Guelph	59.00	278.33	470 00	.....
Listowel	60 00	235.00	313 37	8 33
Stratford	59.00	290.00	411 67	.....
Toronto	57.25	257.50	467 57	.....
Other places	58.50	273.50	542 63	6 25
Average 1889	58.74	271.26	446 56	2 17
Average 1888	58.00	282.71	464 79	2 94
Average 1884-9	58.75	278.85	416 19	3 56
Fireman 1889	67.41	268.86	331.14	13.41
Fireman 1888	66.38	281.31	391.62	....
Fireman 1884-9	63.32	270 23	349.30	5.03
Harness-maker:				
Barrie	60.00	307.00	408 40	.....
Brantford	59.00	273.75	454 00	.....
Ottawa	60.00	254.50	379 89	3 13
Perth	60.00	295.00	514 33	.....
Peterborough	60.00	302.00	394 33	.....
Toronto	58.40	292 80	387 20	.....
Woodstock	60.00	296 75	456 13	26 50
Other places	59.80	288.93	387 07	8 72
Average 1889	59.68	286.00	408 29	5 57
Average 1888	58.15	287.31	408 49	4 62
Average 1884-9	58.20	281.92	396 92	6 00
Laborer (builder's):				
Galt	59.60	159.40	196 40	32 00
Hamilton	56 25	204.33	279 13	42 33
St. Catharines	54.00	247.25	372 13	41 50
Toronto	50.36	196.91	332 08	15 91
Other places	57.06	214.75	306 88	15 31
Average 1889	55.33	205.00	297 14	26 13
Average 1888	53.21	217.15	320 22	4 67
Laborer (general) 1889	59.73	257.77	294 80	6 61
Laborer (general) 1888	57.59	256.91	308 39	6 10
Laborer (general) 1884-9	58.29	244.05	293 31	8 92
Lumber mill employé 1889	64.56	208.56	297 17	17 89
Lumber mill employé 1888	57.00	254.77	356 85	10 77
Lumber mill employé 1884-9	62.34	246.76	372 61	13 27
Machine hand 1889	57.21	277.77	385 71	4 44
Machine hand 1888	56.84	267.97	404 97	17 74
Machine hand 1884-9	57.23	264.93	379 47	7 83
Machinist:				
Barrie	57.00	305.60	462 00	.....
Brantford	59.00	287 83	416 33	.....
Brockville	60.00	273.33	468 33	.....
Carleton Place	58.78	299.78	525 32	3 33
Galt	57.00	288.70	513 93	6 00
Gananoque	59.00	262.00	502 42	8 33
Guelph	59.00	273.18	463 73	13 64
Hamilton	55.41	229.82	407 47	23 00
London	56.11	261.22	399 24	2 78
Ottawa	60.00	284.67	497 83	.....
Peterborough	59.67	301 67	572 86	....
Petrolea	58.33	296 33	517 83	8 33
Stratford	52 00	284.42	447 08	0 83
Toronto	58.14	263.00	479 54	.....
Whitby	58.00	287.78	423 89	17 78
Other places	59.23	276.69	512 48	3 46
Average 1889	57.08	276.60	467 86	6 23
Average 1888	57.55	276.40	474 64	4 05
Average 1884-9	57.99	269.88	451 51	6 76
Marble cutter:				
Ottawa	59.14	268.29	498 43	.....
Toronto	58.00	292.00	547 44	.....
Other places	57.70	283.60	439 00	5 28
Average 1889	58.25	279.50	476 07	2 64
Average 1888	59.42	243.75	434 73	2 08
Average 1884-9	58.16	258.67	439 50	3 82
Marble polisher:				
Ottawa	59 17	269.33	374 08	.....
Toronto	59.33	288.67	423 64	.....
Other places	59.67	275.67	402 44	33 33
Average 1889	59.33	275.75	393 56	8 33
Average 1888	58.60	254.20	323 22	..
Average 1884-9	58.98	266.13	358 83	2 78
Melter 1889	57.83	269.17	442 83	11 67
Melter 1888	58.14	252.14	420 64	24 57
Melter 1884-9	58.71	264.64	383 48	10 11
Miller:				
Ottawa	60.00	283.83	472 83	..
Other places	63.47	288.26	433 53	5 26
Average 1889	62.72	287.20	442 97	4 00
Average 1888	64.13	272.25	457 83	9 38
Average 1884-9	65.29	288.70	470 10	5 44
Millwright 1889	59.50	292 75	485 08	.....
Millwright 1888				..
Millwright 1884-9	62.77	265.78	525 82	5 02
Moulder:				
Brockville	60.00	267.14	535 71	3 57
Chatham	58.40	271.40	535 00	..
Cobourg	59.00	278 00	542 75	.....
Guelph	59.00	289 00	578 00	..
Hamilton	59.00	253.50	472 16	1 88
London	59.43	267.86	483 58	..
Oshawa	54.17	262 17	596 00	5 00
Ottawa	60.00	287.50	484 75	.....

TABLE IX.—YEARLY TIME EMPLOYED AND WAGES EARNED—*Continued.*

Occupations.	Hours per week.	Days in year.	Yearly wages.	Extras of self.
	No.	No.	$ c.	$ c.
Moulder.—*Con.*				
Peterborough	60.00	300.00	587 33	.....
Toronto	59.86	249.71	563 57	.....
Other places	58.88	284.44	471 06	0 63
Average 1889	58.84	273.46	521 75	1 07
Average 1888	57.72	268.20	496 78	2 52
Average 1884-9	57.82	257.25	485 68	3 33
Packer 1889..	60.65	280.78	366 06	3 91
Packer 1888..	59.25	274.75	392 42	.....
Packer 1884-9	60.03	278.59	366 61	17 13
Painter:				
Barrie	60.00	274.75	361 16	2 50
Brockville	59.63	258.75	410 00	.....
Carleton Place	59.20	269.20	400 27	1 40
Chatham	59.75	284.50	430 75	.....
Cobourg	59.40	282.60	352 50	....
Collingwood	60.00	243.40	460 00	.....
Guelph	59.00	287.50	459 50	....
Hamilton	57.25	212.38	375 13	14 37
London	52.58	253.83	329 58	23 29
Oshawa	59.00	266.67	436 67	.....
Ottawa	59.25	233.00	394 33	....
Perth	59.70	238.50	361 30	10 40
Peterborough	57.43	284.57	414 57	7 14
Preston	58.75	229.50	301 75	.....
Stratford	54.00	246.67	390 00	.....
Toronto	53.07	243.93	451 93	6 40
Other places	56.74	260.61	400 41	7 83
Average 1889	57.37	254.13	394 65	6 26
Average 1888	56.68	246.11	403 15	5 57
Average 1884-9	57.58	251.18	397 01	7 73
Patternmaker 1889..	58.93	278.36	486 86	5 36
Patternmaker 1888..	56.00	270.00	470 00	.....
Patternmaker 1884-9	58.00	282.79	506 57	1 42
Plasterer:				
Guelph	59.00	237.50	561 25	.....
London	55 33	232.00	485 67	.....
Orillia	60.00	181.33	356 00	.....
Toronto	48.29	182.14	474 61	.....
Other places	57.25	208.00	422 63	15 38
Average 1889..	55.12	205.16	458 93	4 92
Average 1888..	54.85	221.70	499 34	2 50
Average 1884-9	56.10	215.28	466 69	4 26
Plumber:				
Brockville	60.00	285.75	569 00	.....
Guelph	59.00	290.00	628 33	....
Hamilton	56.00	238.75	388 75	.....
London	51.20	293.20	422 50	2 10
Ottawa	55.00	255.91	429 95	.....
St. Catharines	54.00	297.50	533 33	.....
Stratford	60.00	298.67	546 67	.....
Other places	60.00	289.00	503 50	.....
Average 1889..	55.95	276.53	484 87	0 28
Average 1888.	56.35	269.18	501 94	...
Average 1884-9	57.16	261.67	464 93	8 32
Porter 1889..	63.14	294.00	340 39	1 43
Porter 1888..	65.38	319.50	380 68	.....
Porter 1884-9	65.73	299.91	370 82	0 91
Press feeder 1889..	48.00	228.00	242 67	.....
Press feeder 1888..	56.25	260.00	236 00	.....
Press feeder 1884-9	54.14	265.09	224 53	.....
Pressmen:				
Guelph	63.00	286.00	522 00	.....
Toronto	54.60	290.90	440 20	16 00
Other places	57.00	271.71	462 39	10 71
Average 1889..	57.27	283 68	465 85	10 68
Average 1888..	56.90	296.50	499 10	.....
Average 1884-9	57.38	292.78	468 09	19 43
Printer:				
Aylmer	56.00	312.33	407 33	17 33
Barrie	60.00	307.00	323 00	16 67
Brantford	60.00	270.67	473 00	3 33
Brockville	59.67	290.00	371 67	5 00
Cornwall	57 00	302 67	596 00	10 00
London	56.50	291.67	436 56	.....
Ottawa	54.00	272.43	481 19	.....
St. Catharines	57.90	283.90	456 60	2 50
St. Thomas	60.00	310.50	483 41	.....
Stratford	54.00	302.50	365 00	.....
Toronto	64.88	228.88	444 79	15 00
Other places	59.57	302.29	445 71	.....
Average 1889..	58.52	285.52	437 24	4 95
Average 1888..	57.75	291.49	455 88	6 29
Average 1884-9	56.84	276.84	432 85	4 98
Railway employé:				
Brakeman 1889..	65.33	294.93	489 45	3 00
Brakeman 1888..	69.64	321.00	533 38	.....
Brakeman 1884-9	64.32	293.76	467 34	4 39
Car builder 1889..	51.22	272.00	402 41	23 35
Car builder 1888..	59.40	280.60	510 30	1 20
Car builder 1884-9	53.15	273.73	437 57	9 14
Car repairer 1889..	55.60	284.53	417 27	1 33
Car repairer 1888..	57.73	295.87	467 53	4 00
Car repairer 1884-9	58.96	290.21	419 08	1 91
Conductor 1889..	72.70	291.50	686 92	.....
Conductor 1888..	74.83	328.08	777 08	.....
Conductor 1884-9	70.12	299.45	674 20	1 86
Engineer 1883..	75.36	311.36	917 70	.....
Engineer 1888..	70.33	300.17	851 66	.....
Engineer 1884-9	70.56	303.89	853 15	3 61
Fireman 1889..	74.86	299.14	548 32	.....
Fireman 1888..	64.86	312.00	582 00	.....
Fireman 1884-9	66.26	307.35	527 35	1 14
Switchman 1889..	75.82	344.41	468 64	11 76
Switchman 1888..	.....	.....	.....	.....
Switchman 1884-9	67.50	317.65	434 52	4 02
Salesman:				
Barrie	60.00	302.33	363 33	.....
Bowmanville	60.00	305.00	464 00	.....
Brantford	59.00	306.86	495 43	.....
Brockville	63.33	306.67	400 00	.....
Collingwood	60.00	292.78	369 56	2 22
Lindsay	70.00	302.00	503 00	.....
Listowel	64.00	307.00	358 33	.....
Stratford	59.83	300.83	435 00	.....
Other places	65.83	301.83	412 83	7 50
Average 1889..	62.25	302.00	415 23	1 96
Average 1888..	61.22	293.46	420 72	.....
Average 1884-9	62.64	301.67	423 29	6 95
Shoemaker (custom):				
Aylmer	60.00	263.25	385 00	.....
Barrie	60.00	295.00	377 25	.....
Bowmanville	60.00	299.50	436 50	.....
Brockville	60.00	216.00	324 00	24 00
Carleton Place	60.00	274.40	372 10	.....

TABLE IX—YEARLY TIME EMPLOYED AND WAGES EARNED.—*Continued.*

Occupations.	Hours per week.	Days in year.	Yearly wages.	Extras of self.
	No.	No.	$ c.	$ c.
Shoemaker (custom)-*Con.*				
Hamilton	57.80	254.80	420 60	.....
Lindsay	58.80	269.60	355 60	36 40
Listowel	60 00	288.60	323 50	.....
London	64.25	250.00	410 53	25 00
Ottawa	59.00	245.60	409 47	.....
Perth	60.00	270.57	415 43	.....
Preston	60.00	280.00	377 33	.....
Stratford	57.50	264.75	335 00	37 50
Toronto	58.92	249.31	360 22	5 77
Other places	58.67	292.67	395 08	.....
Average 1889	59.55	266.82	378 38	7 55
Average 1888	58.35	281.10	407 71	3 17
Average 1884-9	58.58	277.14	385 76	12 06
Stonecutter:				
Guelph	58.00	233.33	585 00	.....
Ottawa	59 00	233.00	526 48	.....
Toronto	46.67	175.17	581 68	.....
Other places	50.67	215.00	485 00	30 00
Average 1889	54 88	216.33	542 41	3 75
Average 1888	56.96	205.25	533 05	3 36
Average 1884-9	57.14	214.87	501 39	1 65
Stonemason:				
Barrie	60.00	227.00	454 00	.....
Cornwall	57.50	155.50	366 25	21 25
Galt	59.00	149 50	299 00	12 50
Ottawa	59.00	240.47	567 10	.....
Perth	60.00	176.00	453 00	15 00
Other places	57.80	178.93	453 39	10 33
Average 1889	58.65	198.33	469 48	7 39
Average 1888	56.97	176.86	478 93	2 50
Average 1884-9	58.03	183.14	434 21	12 51
Stove mounter 1889	58.54	247.54	369 70	0 92
Stove mounter 1888	55.00	216.78	342 74	8 89
Stove mounter 1884-9	58 47	249.94	378 54	3 96
Tailor:				
Barrie	60.00	295.00	418 86	.....
Brockville	54.00	259.00	473 00	.....
Hamilton	57.23	249.17	434 17	.....
Ottawa	60.75	242.75	414 50	.....
St. Catharines	61.20	254.20	508 40	.....
Stratford	58.00	264.25	411 25	.....
Toronto	61.50	225.63	418 00	6 25
Other places	59.04	274.61	433 54	.....
Average 1889	59.20	262.56	435 89	0 82
Average 1888	58.37	248.75	402 08	5 76
Average 1884-9	58.70	258.51	411 27	5 09
Tanner and currier:				
Brockville	60.00	298.00	477 00	20 00
Kingston	59.14	294.00	415 68	25 00
Listowel	54.00	307.00	347 50	.....
Perth	60.00	287.33	447 00	.....
Whitby	59.00	296.00	413 33	8 50
Other places	59.33	285.11	410 74	52 78
Average 1889	58.84	293.82	419 23	22 44
Average 1888	57.71	279.29	425 06	.....
Average 1884-9	58.97	288.05	402 49	4 77
Teamster 1889	64.28	293.59	360 02	6 06
Teamster 1888	61.29	289.65	350 07	0 32
Teamster 1884-9	62.46	287.52	348 19	7 23
Tinsmith:				
Aylmer	60.00	279.00	393 58	2 67
Barrie	59.80	292.80	451 00	.....
Bowmanville	60.00	300.75	432 00	.....
Brantford	59.00	280.83	389 50	.....
Galt	57.25	233.50	330 00	.....
Guelph	59.00	295.83	400 00	.....
Hamilton	56.40	223.00	308 00	.....
Lindsay	60.00	267.75	397 00	.....

Occupations.	Hours per week.	Days in year.	Yearly wages.	Extras of self.
	No.	No.	$ c.	$ c.
Tinsmith.—*Con.*				
London	58.00	288.86	417 92	7 14
Ottawa	55.00	245.25	393 00	.....
Other places	59.00	286.48	422 77	3 57
Average 1889	58.65	276.94	401 46	1 96
Average 1888	58.34	285.34	427 64	.....
Average 1884-9	57.86	283.24	415 40	3 42
Tobacco roller 1889	55.00	254.38	416 44	5 25
Tobacco roller 1888	50.86	228.29	425 64	3 43
Tobacco roller 1884-9	54.25	238.86	418 54	3 01
Trunkmaker 1889	56.20	266.20	413 16	1 30
Trunkmaker 1888	53.50	305.00	636 50	.....
Trunkmaker 1884-9	55.31	282.42	458 00	24 07
Upholsterer:				
Guelph	59.00	278.00	497 00	.....
Hamilton	59.00	255.00	349 50	10 00
Ottawa	60.00	279.20	506 50	.....
Other places	57.92	292.00	446 65	7 60
Average 1889	58.68	282.28	457 03	4 85
Average 1888	56.67	261.00	380 73	.....
Average 1884-9	57.14	272.00	429 43	4 25
Watchman 1889	79.17	362.00	417 86	.....
Watchman 1888	73.57	322.00	413 68	.....
Watchman 1884-9	72.84	340.10	389 04	8 52
Wheelmaker 1889	58.53	260.12	327 45	18 31
Wheelmaker 1888	.....	.....	.....	.....
Wheelmaker 1884-9	57.46	249.81	383 83	14 58
Wood turner:				
Bowmanville	57.00	280.00	493 67	6 67
Guelph	59 00	274.00	516 00	.....
Hamilton	57.50	237.50	421 25	5 00
Toronto	55.67	256.33	466 70	.....
Other places	60.43	290.43	464 27	.....
Average 1889	58 00	271 00	472 55	1 82
Average 1888	56 83	279.50	472 42	4 16
Average 1884-9	56.84	271.58	431 09	6 22
Woodworker:				
Chatham	59.50	272.80	469 40	8 50
Lindsay	60.00	297.25	470 25	5 00
Perth	60.00	270.25	474 13	.....
Stratford	50.73	291.00	455 45	.....
Toronto	54 67	294 67	536 71	.....
Other places	56.71	260.29	370 08	18 94
Average 1889	56.35	275.67	436 39	8 71
Average 1888	57.00	254.48	389 58	4 00
Average 1884-9	57.31	273.15	422 21	7 65
Woollen mill operative 1889	59.64	285.80	406 76	4 48
Woollen mill operative 1888	59 00	286.40	388 38	0 66
Woollen mill operative 1884-9	59.61	285.47	374 22	1 48
Females over 16 years.				
Cotton mill operative 1889	60.00	294.78	257 94	.....
Cotton mill operative 1888	60.30	248.20	226 25	0 42
Cotton mill operative 1884-9	60.17	267.21	220 17	0 07
Dressmaker 1889	58.76	267.52	201 06	8 32
Dressmaker 1888	50.57	274.00	194 86	.....
Dressmaker 1884-9	56.79	273.92	180 34	3 47
Saleswoman 1889	60.50	296.50	230 83	.....
Saleswoman 1888	55.50	292.50	283 25	.....
Saleswoman 1884-9	59.04	297.40	230 62	.....
Tailoress 1889	56.28	262.52	242 29	3 04
Tailoress 1888	55.79	263.25	207 26	3 12
Tailoress 1884-9	56.30	258.92	204 17	1 85
Woollen mill operative 1889	60.00	285.69	185 00	.....
Woollen mill operative 1888	59.40	286.30	202 12	.....
Woollen mill operative 1884-9	59.58	281.45	175 92	1 08

YEARLY WAGES AND COST OF LIVING.

TABLE X.—Showing by localities the averages of time employed, yearly earnings and cost of living of workers with dependents, in the chief trades or callings for the year 1889.

Occupations by localities.	No. of dependents.	Time employed.		Yearly earnings.				Cost of living.		Surplus or deficit (—).
		Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total.	Total.	Per capita.	
		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Blacksmith :										
Barrie	6.50	60.00	304.75	416 20	.....	.....	416 20	341 25	45 50	74 95
Bowmanville	2.80	58.80	296.40	444 80	.....	4 80	449 60	366 50	96 44	83 10
Brockville	2.75	60.00	246.50	372 50	15 00	.....	387 50	376 75	100 47	10 75
Chatham	2 33	59.75	264.17	433 33	.....	.....	433 33	390 33	117 10	43 00
Galt	3.75	57.50	288.75	500 00	.....	.....	500 00	428 50	90 21	71 50
Guelph	3.29	59.86	290.00	441 14	7 14	.....	448 28	401 37	93 63	46 91
Hamilton	3.20	57.60	265.00	427 40	.....	.....	427 40	406 60	96 81	20 80
Lindsay	2.57	60.00	289.57	432 46	.....	.....	432 46	380 61	106 57	51 85
Ottawa	4.65	59.94	256.76	429 31	.....	5 77	435 08	431 47	76 41	3 61
Perth	3.78	59.22	280.44	478 33	.....	8 33	486 66	454 92	95 22	31 74
St. Catharines	3.80	60.00	277.20	495 95	.....	.....	495 95	476 20	99 21	19 75
Stratford	3.60	60.00	290.80	431 10	5 00	.....	436 10	407 00	88 65	29 10
Toronto	3.00	58.18	281.09	446 36	.....	40 91	487 27	497 55	124 39	—10 28
Bricklayer :										
Guelph	4.75	59.00	243.75	623 75	.....	.....	623 75	526 75	91 61	97 00
Hamilton	3.60	54.80	169.60	488 00	5 00	.....	493 00	451 60	98 17	41 40
Listowel	6.00	60.00	159.25	363 00	.....	65 00	428 00	348 00	49 71	80 00
Ottawa	4.50	59.00	215.88	548 03	.....	7 50	555 53	477 13	86 75	78 40
St. Catharines	3.75	54.00	198.50	595 50	2 00	.....	597 50	542 84	114 28	54 66
Toronto	3.40	50.00	192.80	537 20	.....	.....	537 20	515 82	117 23	21 38
Cabinet maker :										
Bowmanville	2.11	56.78	280.22	463 44	1 11	.....	464 55	405 67	130 39	58 88
Guelph	3.33	59.00	266.67	436 67	2 00	16 66	455 33	433 00	99 92	22 33
Hamilton	3.50	57.00	235.83	364 17	.....	.....	364 17	350 67	77 93	13 50
London	3.60	53.00	285.60	435 58	2 00	26 00	463 58	456 37	99 21	7 21
Ottawa	4.25	60.00	275.75	493 29	.....	.....	493 29	423 25	80 62	70 04
Stratford	3.75	60.00	302.50	497 50	23 75	25 00	546 25	458 75	96 58	87 50
Toronto	3.14	56.86	292.29	528 76	.....	17 86	546 62	525 52	126 85	21 10
Carpenter :										
Aylmer	1.75	59.25	223.25	277 50	18 75	.....	296 25	299 74	109 00	—3 49
Brantford	2.75	59.25	250.25	451 75	.....	.....	451 75	406 89	108 50	44 86
Brockville	3.22	60.00	267.33	467 89	.....	..	467 89	420 67	99 63	47 22
Cobourg	5.25	59.75	276.25	413 13	.....	.....	413 13	355 75	56 92	57 38
Guelph	2.83	57.33	266.67	418 33	.....	...	418 33	397 83	103 78	20 50
Hamilton	3.58	56.25	234.42	437 67	5 00	22 92	465 59	431 92	94 24	33 67
Kingston	4.50	60.00	219.00	324 38	17 50	62 50	404 38	469 56	85 38	—65 18
Lindsay	4.25	57.50	239 00	369 00	2 50	17 50	389 00	373 25	71 10	15 75
London	5.67	50.50	293.17	452 59	19 08	17 33	489 00	434 73	65 21	54 27
Orillia	4.00	55.20	252.20	430 00	20 00	.....	450 00	438 60	87 72	11 40
Ottawa	4.64	60.00	235.18	393 70	.....	12 54	406 24	385 00	68 31	21 24
Perth	3.78	58.00	242.33	389 39	6 89	14 22	410 50	387 19	81 04	23 31
Peterborough	4.80	55.20	289.60	456 00	.....	....	456 00	411 40	70 93	44 60
St. Catharines	3.40	58.60	253.60	459 20	24 00	6 00	489 20	446 00	101 36	43 20
St. Thomas	3.33	55.50	273.33	469 16	6 67	10 00	485 83	457 75	105 62	28 08
Stratford	3.25	54.00	278.75	490 00	.....	.....	490 00	407 25	95 82	82 75
Toronto	2.60	49.70	270.00	547 81	.....	21 50	569 31	496 96	138 04	72 35
Woodstock	3.75	59.75	275.50	466 30	1 25	.....	467 55	379 42	79 88	88 13
Engineer (stationary) :										
Brockville	3.75	65.75	303.50	451 00	.....	.....	451 00	439 00	92 42	12 00
Chatham	3.20	69.00	276.00	419 80	.....	.....	419 80	336 20	80 05	83 60
Guelph	3.75	71.50	293.75	492 50	.....	12 50	505 00	446 25	93 95	58 75
St. Thomas	3.00	79.50	350.00	438 60	.....	.....	438 60	376 69	94 17	61 91
Stratford	4.75	63.00	294.75	375 00	.....	.....	375 00	370 00	64 35	5 00
Toronto	3.67	58.67	301.00	499 17	1 66	.....	500 83	495 17	106 11	5 66

NOTE.—In this table localities are omitted from which less than four returns have been received in the occupation given.

TABLE X.—YEARLY WAGES AND COST OF LIVING—*Continued.*

Occupations by localities.	No. of dependents.	Time employed.		Yearly earnings.				Cost of living.		Surplus or deficit (—).
		Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total.	Total.	Per capita.	
		No.	No.	$ c	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Laborer (builder's):										
Hamilton	3.70	54.60	183.90	275 45	50 80	9 00	335 25	326 35	69 44	8 90
St. Catharines	3.00	54.00	244.75	372 13	41 50	.....	413 63	365 14	91 29	48 49
Toronto	3.78	50.67	198.33	329 57	19 44	53 89	402 90	419 84	87 87	—16 94
Laborer (general):										
Aylmer	3.67	62.00	262.17	302 44	7 50	7 50	317 44	308 78	66 17	8 66
Barrie	4.30	60 00	294.10	336 60	13 70	9 00	359 30	321 36	60 63	37 94
Carleton Place	5.75	60.00	264.00	316 52	.....	40 62	357 14	390 41	57 84	—33 27
Chatham	2.40	59.40	266.00	312 00	12 00	29 00	353 00	344 00	101 18	9 00
Cornwall	4.25	60.00	181.75	246 75	11 25	18 50	276 50	333 64	63 55	—57 14
Galt	2.60	59.00	285.80	335 75	8 40	20 00	364 15	293 24	81 46	70 91
Gananoque	4.50	60.00	283.00	329 00	13 00	75 75	417 75	414 00	75 27	3 75
Guelph	3.75	59.00	300.00	376 00	.....	12 50	388 50	379 50	79 90	9 00
Hamilton	2.73	59.33	266.13	345 67	.....	2 00	347 67	351 48	94 15	—3 81
Kingston	2.75	59.88	205.88	207 00	13 38	69 87	290 25	366 25	97 67	—76 00
Lindsay	3.36	64.73	256.73	298 16	1 82	31 82	331 80	324 35	74 33	7 45
London	3.50	60.20	260.70	294 10	16 44	62 00	372 54	373 51	83 00	—0 97
Orillia	3.00	61.25	239.00	273 00	16 25	100 00	389 25	340 40	85 10	48 85
Ottawa	4.82	60.00	248.12	283 12	5 00	28 24	316 36	324 82	55 78	—8 46
Owen Sound	5.00	59.67	261.67	392 54	1 67	46 33	350 54	339 83	56 64	10 71
Perth	4.23	59.38	271.77	316 35	6 69	29 77	352 81	376 62	72 00	—23 81
Peterborough	4.75	60.00	253.25	304 25	15 00	27 50	346 75	333 00	57 91	13 75
St. Catharines	2.82	60.80	254.12	292 46	6 82	22 35	321 63	316 99	82 90	4 64
St. Thomas	3.33	62.50	294.17	342 97	.....	.....	342 97	347 17	80 12	—4 20
Stratford	4.17	52.67	387.33	303 00	15 83	30 00	348 83	351 00	67 94	—2 17
Toronto	3.56	57.33	211.00	279 14	.....	69 67	348 81	417 00	91 54	—68 19
Whitby	4.25	60.00	277.75	327 50	.....	.....	327 50	309 25	58 90	18 25
Machine hand:										
Bowmanville	4.57	57.14	278.43	402 14	2 86	5 71	410 71	355 43	63 79	55 28
Guelph	5.00	59.00	288.57	457 00	8 57	14 29	479 86	446 29	74 38	33 57
London	3.25	54.50	274.50	353 65	20 25	42 50	416 40	406 05	95 54	10 35
Perth	3.60	59.40	270.80	366 30	.....	49 60	415 90	390 60	84 91	25 30
Stratford	3.50	55.00	298.50	415 00	.....	62 50	477 50	378 95	84 10	98 55
Waterloo	2.75	60.00	267.50	300 25	3 00	21 25	324 50	323 75	86 33	0 75
Machinist:										
Barrie	5.17	55.00	307.00	475 83	.....	.....	475 83	344 75	55 91	131 08
Carleton Place	3.57	58.71	296.14	536 55	4 28	.....	540 83	510 07	111 58	30 76
Galt	4.14	56.29	288.86	521 33	8 57	.....	529 90	470 85	91 55	59 05
Gananoque	3.80	60.00	274.40	522 90	.....	.....	522 90	443 90	92 48	79 00
Guelph	3.64	59.00	273.18	463 73	13 64	.....	477 37	431 64	93 10	45 73
Hamilton	3 63	55.34	231.06	412 69	24 44	13 44	450 57	448 03	96 87	2 54
London	3.44	56.11	261.22	399 24	2 78	.....	402 02	412 71	92 86	—10 69
Peterborough	4.33	59.67	301.67	572 86	.....	.....	572 86	487 50	91 41	85 36
Stratford	2.95	52.10	284.10	446 00	1 00	11 25	458 25	422 15	106 87	36 10
Toronto	3.25	58.13	268.25	498 65	....	33 00	531 65	554 59	130 49	—22 94
Whitby	2.60	56.40	292.00	478 00	32 00	.....	510 00	438 40	121 78	71 60
Moulder:										
Brockville	3.86	60.00	267.14	535 71	3 57	.....	539 28	436 71	89 91	102 57
Guelph	5.40	59.00	289.00	578 00	.....	.....	578 00	502 60	78 53	75 40
London	5.00	60.00	283.20	537 24	.....	28 00	565 24	502 62	83 77	62 62
Oshawa	4.20	55.00	269.60	605 20	6 00	.....	611 20	549 28	105 63	61 92
Ottawa	4.75	60 00	287.50	484 75	.....	12 00	496 75	419 75	73 00	77 00
Toronto	3.50	59.83	251.00	576 83	.....	.....	576 83	558 90	124 20	17 93
Painter:										
Brockville	2.00	60.00	278.75	441 25	.....	.....	441 25	400 50	133 50	40 75
Cobourg	3.40	59 40	282.60	352 50	.....	....	352 50	329 10	74 80	23 40
Collingwood	4.00	60.00	246.25	458 00	.....	.....	458 00	405 19	81 04	52 81
Guelph	2.75	59.00	287.50	459 50	.....	.....	459 50	398 50	106 27	61 00
Hamilton	3.17	57.33	211.67	368 83	15 00	.....	383 83	398 67	95 68	—14 84
London	3.71	50.57	271.43	342 56	33 28	23 00	398 84	385 44	81 76	13 40
Ottawa	4.55	59.27	228 73	408 86	.....	26 18	435 04	414 64	74 77	20 40
Perth	3.83	60.00	253.50	400 00	6 67	25 33	432 00	428 33	88 62	3 67

TABLE X.—YEARLY WAGES AND COST OF LIVING—*Concluded.*

Occupations by localities.	No. of dependents.	Time employed.		Yearly earnings.				Cost of living.		Surplus or deficit (−).
		Hours per week.	Days in year.	Wages from occupation.	Extras of self.	Earnings of dependents.	Total.	Total.	Per capita.	
		No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Painter—*Continued:*										
Peterborough	4.80	58.80	294.40	442 80	10 00	.....	452 80	411 40	70 93	41 40
Toronto	3.00	51.80	244.90	480 52	.....	.....	480 52	507 01	126 75	−26 49
Plumber:										
Hamilton	3.25	56.00	238.75	388 75	.....	50 00	438 75	439 00	103 29	−0 25
London	4.00	51.50	293.50	421 88	2 62	56 00	480 50	467 54	93 51	12 96
Ottawa	4.17	55.00	257.00	426 71	.....	12 00	438 71	407 00	78 77	31 71
St. Catharines	3.00	54.00	309.75	553 75	.....	.....	553 75	500 25	125 06	53 50
Printer:										
London	4.50	56.25	288.75	419 00	.....	119 50	538 50	482 70	87 76	55 80
Ottawa	4.40	54.00	275.00	498 95	.....	19 20	518 15	420 20	77 81	97 95
St. Catharines	3.17	58.00	289.33	465 17	.....	75 67	540 84	514 00	123 36	26 84
Toronto	3.40	68.40	224.40	417 96	24 00	39 00	480 96	622 60	141 50	−141 64
Stonecutter:										
Ottawa	4.11	59.00	233.78	546 36	.....	.....	546 36	484 56	94 80	61 80
Toronto	4.00	47.00	178.20	588 58	.....	.....	588 58	636 14	127 23	−47 56
Shoemaker:										
Aylmer	4.25	60.00	263.25	385 00	.....	.....	385 00	375 88	71 60	9 12
Barrie	4.50	60.00	295.00	379 67	.....	.....	379 67	307 92	55 98	71 75
Brockville	4.40	60 00	216.00	324 00	24 00	.....	348 00	405 40	75 07	−57 40
Carleton Place	2.50	60.00	297.25	406 50	.....	6 25	412 75	490 75	140 21	−78 00
Hamilton	3.50	57.50	262.75	455 75	.....	27 50	483 25	417 58	92 79	65 67
Listowel	3.00	60.00	290.50	304 38	.....	17 50	321 88	259 38	64 84	62 50
London	4.50	66.75	250.00	410 53	25 00	25 00	460 53	463 85	84 34	−3 32
Ottawa	4.40	59.00	245.60	409 47	.....	14 40	423 87	411 60	76 22	12 27
Perth	4.17	60.00	270.33	424 67	.....	33 33	458 00	425 83	82 42	32 17
Stratford	2.50	57.50	264.75	335 00	37 50	.....	372 50	364 00	104 00	8 50
Toronto	2.57	58.00	237.43	368 93	.....	37 14	406 07	469 63	131 50	−63 56
Tailor:										
Hamilton	3.20	57.80	249.00	453 00	.....	.....	453 00	406 40	96 76	46 60
Ottawa	4.75	60.75	242.75	414 50	.....	63 00	477 50	447 75	77 86	29 75
Tanner and currier:										
Brockville	4.00	60.00	297.50	483 75	25 00	.....	508 75	463 13	92 63	45 62
Kingston	2.91	59.18	289.36	420 32	31 82	22 73	474 87	419 73	107 37	55 14
Listowel	3.75	54.00	307.00	347 50	.....	.....	347 50	336 77	70 90	10 73
Whitby	4.25	59.00	294.38	428 38	8 12	80 00	516 50	481 68	91 75	34 82
Teamster:										
Ottawa	4.86	61.86	299.86	375 50	.....	14 29	389 79	393 93	67 26	−4 14
Stratford	3.80	66.00	302.40	358 00	.....	12 00	370 00	368 80	76 83	1 20
Tinsmith:										
Aylmer	3.80	60.00	294.80	422 30	3 20	.....	425 50	409 20	85 25	16 30
London	3.00	56.50	286.25	420 68	12 50	25 00	458 18	404 86	101 21	53 32
Ottawa	3.00	55.00	245.25	393 00	.....	.....	393 00	379 25	94 81	13 75
Woodturner:										
Guelph	4.25	59.00	267.50	520 00	.....	.....	520 00	471 50	89 81	48 50
Hamilton	3.75	57.50	237.50	421 25	5 00	.....	426 25	404 75	85 21	21 50
Woodworker:										
Chatham	2.70	59.50	272.80	469 40	8 50	.....	477 90	431 30	116 57	46 60
Lindsay	3.50	60.00	297 25	470 25	5 00	.....	475 25	396 70	88 15	78 55
Perth	2.50	60.00	270.25	474 13	.....	.....	474 13	411 75	117 64	62 38
Stratford	4.63	50.25	291.75	478 13	.....	16 25	494 38	416 25	74 00	78 13

COST OF LIVING—MALE HOUSEHOLDERS.

TABLE XI.—Showing by localities the averages of rent, taxes, fuel, clothing and food, as derived from returns furnished by 2,476 male householders for the year 1889; also the total cost of living per capita.

Localities.	Rent.	Taxes, interest and in stalments.	Fuel.	Clothing per capita.			Food per capita.			Cost of living per capita.		
	T.	O.	O.&T.	O.	T.	Av.	O.	T.	Av.	O.	T.	Av.
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Aylmer	68 79	38 18	29 17	10 29	16 76	13 68	41 03	43 56	42 33	85 02	88 27	86 96
Barrie	64 50	11 75	31 38	13 60	13 54	13 58	37 53	40 08	38 74	60 75	75 08	67 53
Berlin	69 19	62 55	30 59	19 57	20 07	19 93	39 07	37 58	38 01	103 74	90 09	94 29
Bowmanville	76 06	13 97	51 03	26 57	29 86	28 34	24 75	33 44	31 45	77 05	101 35	90 10
Brantford	74 21	22 89	35 83	25 33	20 14	22 12	56 37	46 03	49 93	107 19	93 20	98 44
Brockville	81 56	22 77	38 80	26 43	25 16	25 66	45 03	44 58	44 76	94 60	108 24	102 85
Carleton Place	77 92	38 56	31 58	17 03	14 50	15 52	39 78	44 50	42 56	80 14	93 11	87 87
Chatham	68 69	33 37	32 87	16 85	13 63	15 02	52 98	49 66	51 09	95 63	101 62	99 15
Cobourg	62 83	34 28	38 81	13 56	12 45	12 69	33 11	34 27	34 02	70 59	73 23	72 66
Collingwood	57 85	12 88	35 52	20 35	22 86	21 60	32 21	38 68	35 42	67 50	84 82	76 10
Cornwall	73 30	54 65	41 10	10 08	13 74	12 42	39 37	40 07	39 79	75 20	92 13	86 46
Galt	73 84	25 91	35 81	24 05	17 57	19 69	54 32	51 90	52 75	83 67	97 52	91 09
Gananoque	65 65	66 21	39 96	18 16	17 72	17 89	42 43	38 92	40 27	94 62	94 58	94 60
Guelph	73 68	43 68	46 64	14 93	15 40	15 20	42 93	45 74	44 53	85 79	99 08	93 34
Hamilton	90 05	96 30	37 13	12 50	14 46	13 89	37 57	39 11	38 65	81 38	87 72	85 90
Kingston	68 72	11 57	31 88	22 84	22 11	22 28	48 22	50 08	49 63	89 20	100 97	98 16
Lindsay	72 01	22 87	30 78	17 06	20 56	18 72	54 64	43 43	48 92	77 72	88 41	82 59
Listowel	57 74	16 77	29 67	18 02	22 47	20 12	30 62	40 65	35 77	61 70	93 47	76 71
London	66 74	32 95	37 45	17 25	15 17	15 91	50 95	44 06	46 54	88 60	84 68	86 11
Orillia	82 00	42 68	24 58	17 81	20 14	18 64	49 75	49 69	49 73	80 29	94 51	84 74
Oshawa	65 72	29 97	42 67	11 51	11 76	11 70	44 93	46 61	45 92	80 35	88 58	84 82
Ottawa	110 01	40 00	33 87	13 33	11 59	11 94	37 22	34 63	35 15	72 73	77 01	76 16
Owen Sound	67 07	12 93	32 27	15 38	20 90	18 79	34 76	30 26	32 08	56 61	88 90	71 59
Perth	62 32	72 40	32 74	16 71	21 15	19 16	36 54	36 85	36 71	85 98	85 98	85 93
Peterborough	86 17	28 00	32 87	15 41	16 81	16 48	35 71	33 28	33 85	71 39	79 26	77 42
Petrolea*	90 00	86 56	30 00	45 00	32 50	38 18	70 00	95 83	84 09	197 02	181 90	190 04
Preston	60 33	28 00	31 28	14 60	14 84	14 73	31 20	39 19	35 63	69 41	83 49	78 06
St. Catharines	55 80	36 47	40 82	21 61	17 67	18 79	51 35	53 68	52 99	99 95	95 39	96 52
St. George	63 25	4 44	32 83	.....	14 00	14 00	.....	39 00	39 00	63 64	79 55	73 90
St. Thomas	41 83	69 87	35 90	15 98	13 30	14 43	41 91	37 86	39 64	103 51	85 11	93 56
Stratford	80 29	33 31	40 80	25 00	23 08	23 75	36 28	34 70	35 20	95 32	100 51	98 61
Toronto	110 87	117 56	39 64	15 39	16 99	16 67	56 57	56 96	56 89	116 44	118 20	117 88
Waterloo	53 89	41 16	28 71	13 33	16 67	16 11	46 67	39 06	42 50	73 69	79 73	77 87
Whitby	54 67	15 86	57 50	22 77	16 78	19 48	36 15	33 78	34 85	85 69	87 20	86 52
Woodstock	100 35	38 81	43 36	19 35	22 43	20 81	42 30	43 34	42 82	84 50	112 09	97 62
The Province:												
1889	81 24	42 26	37 75	17 65	16 82	17 10	42 29	43 01	42 76	85 12	93 48	90 54
1888	77 63	.....	41 78	18 51	16 92	17 41	45 40	43 57	44 14	88 07	92 93	91 36

* These high averages per capita are due to the small number dependent on workers returned.

MISCELLANEOUS—EXTRA EARNINGS, SOCIETY DUES, ETC.

TABLE XII.—Showing by localities the number of workers making extra earnings outside of regular occupation, the number aided by dependents' earnings, the number quoting rent, fuel, food and clothing, and the number paying society dues and life insurance, together with the average amount so paid.

Localities.	With dependents.									Without dependents.				
	Extra earnings of self.	Earnings of dependents.	Rent.	Taxes, interest and instalments.	Fuel.	Clothing.	Food.	Society dues and life insurance.		Extra earnings of self.	Clothing.	Board and dging.	Society dues and life insurance.	
								No.	Av.				No.	Av.
	No.	No.	No.	No.	No.	No.	No.		$ c.	No.	No.	No.		$ c.
Aylmer	13	7	33	22	42	16	16	22	24 76	2	13	11	4	19 50
Barrie	8	2	45	42	81	87	90	39	18 65	....	66	66	18	16 73
Berlin	3	4	21	10	27	20	23	19	18 71	1	21	23	7	13 70
Bowmanville	12	12	42	30	72	72	72	48	13 90	3	26	26	14	13 00
Brantford	5	5	21	17	38	30	34	21	21 95	3	64	6	10	24 69
Brockville	15	1	73	44	118	119	119	72	22 19	4	76	76	27	20 04
Carleton Place	4	5	23	13	36	37	36	30	16 46	2	13	15	9	18 11
Chatham	13	6	13	11	23	22	22	13	26 92	1	2	2	....	.....
Cobourg	7	9	33	9	42	42	42	31	18 77	1	24	24	11	16 05
Collingwood	16	3	16	15	31	31	31	15	10 07	1	23	23	6	20 13
Cornwall	12	6	26	11	36	34	31	26	14 60	2	10	10	5	26 62
Galt	6	4	22	14	36	30	28	20	32 60	2	10	9	3	33 87
Gananoque	8	5	17	11	28	28	28	17	13 00	4	21	23	2	13 00
Guelph	7	4	81	56	137	137	137	115	18 07	....	27	28	9	20 78
Hamilton	25	23	120	43	160	138	100	105	11 38	4	47	47	20	8 95
Kingston	8	15	29	7	33	36	35	18	14 01	5	26	26	7	9 43
Lindsay	5	10	25	24	44	35	28	19	26 41	3	18	19	6	9 88
Listowel	2	4	19	16	36	36	34	18	23 69	2	38	35	8	14 00
London	44	42	89	54	142	128	135	101	15 63	22	76	76	51	10 17
Orillia	6	7	7	17	24	22	21	7	18 34	....	9	9	3	3 72
Oshawa	6	3	19	14	33	25	27	29	16 41	....	8	9	9	10 72
Ottawa	9	49	167	42	218	217	218	79	8 47	2	69	69	13	6 54
Owen Sound	3	8	14	11	26	15	10	16	13 60	6	13	19	10	9 56
Perth	10	26	50	36	64	53	63	29	17 77	3	35	36	13	14 46
Peterborough	3	4	30	9	39	39	39	26	27 27	....	25	25	10	31 40
Petrolea	1	....	2	2	4	4	4	4	44 35	2	4	4	4	33 25
Preston	2	2	12	6	18	12	12	10	12 05	2	14	15	5	15 93
St. Catharines	29	22	110	31	122	96	91	64	15 16	8	51	46	17	11 24
St. George	2	....	4	2	6	4	4	4	9 88	....	3	3	....	.....
St. Thomas	4	2	23	22	44	42	43	40	24 37	....	10	11	11	18 55
Stratford	18	30	107	61	106	77	80	120	21 57	12	78	105	42	19 61
Toronto	12	40	223	42	265	250	267	194	13 12	4	200	202	98	12 57
Waterloo	8	5	18	6	17	5	5	8	17 75	1	3	5	2	13 00
Whitby	5	9	18	14	32	33	33	13	24 88	2	13	13	6	25 25
Woodstock	5	5	23	23	45	45	45	36	27 97	1	4	5	3	22 00
The Province.	336	379	1,575	787	2,225	2,017	2,003	1,428	17 45	105	1,140	1,181	463	15 01

ANNUAL REPORT

OF THE

BUREAU OF INDUSTRIES

FOR THE

PROVINCE OF ONTARIO

1889.

PART V.—LOAN AND INVESTMENT COMPANIES.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

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1890.

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EIGHTH ANNUAL REPORT

OF THE

BUREAU OF INDUSTRIES.

PART V.

To the Honorable Minister of Agriculture:

Sir,—I have the honor to present herewith Part V. of the eighth annual report of the Bureau of Industries, being a statement of the affairs of Loan and Investment Companies in Ontario for the year 1889.

I have the honor to be, Sir,
Your obedient servant,

A. BLUE,
Secretary.

Toronto, Sept., 1890.

PART V.

LOAN AND INVESTMENT COMPANIES.

STATEMENT OF AFFAIRS.

The number of loan and investment companies doing business in Ontario which have made returns to the Bureau of their affairs for 1889 is seventy-one, being seven more than for the previous year. Several of the latter are new companies, all are comparatively weak concerns, and they do not add much to the aggregate of business as reported for 1888. Of the seventy-one companies, one was organised in 1844, one in 1851, one in 1855, one in 1858, one in 1859, two in 1863, one in 1864, three in 1865, one in 1869, five in 1870, two in 1871, two in 1872, five in 1873, one in 1874, four in 1875, five in 1876, eight in 1877, one in 1878, three in 1879, two in 1880, five in 1881, one in 1882, one in 1883, three in 1884, two in 1885, three in 1886, one in 1887 and five in 1889. Of these, forty-seven are located in four cities, viz: twenty-nine in Toronto, ten in London, five in St. Thomas and three in Hamilton, and from the following general statement of affairs it will appear that a very large proportion of the business of loan and investment societies in the province is carried on in those cities.

Schedule.	Hamilton.	London.	St. Thomas.	Toronto.	Other places.
	$	$	$	$	$
Capital subscribed.....	2,486,382	10,780,500	1,595,350	47,061,700	7,770,289
Liabilities to stockholders	2,198,923	7,895,188	1,063,933	23,902,552	6,569,391
Liabilities to the public..	3,221,224	9,173,501	674,545	42,718,349	7,179,537
Total liabilities.....	5,420,147	17,068,689	1,738,478	66,620,901	13,748,928
Secured loan assets.	5,053,081	15,650,225	1,720,457	59,105,378	13,137,716
Property assets.	367,066	1,418,434	18,021	7,515,523	611,212
Total assets.	5,420,147	17,068,689	1,738,478	66,620,901	13,748,928

The subscribed capital of the companies in the four cities named makes nearly 90 per cent. of the whole, while the assets and liabilities respectively make nearly 87 per cent. of the whole.

The subscribed capital of the seventy-one companies is $69,694,221, which is only $1,754,662 more than the amount of the subscribed capital returned by sixty-four companies in 1888.

The liabilities to stockholders of the seventy-one companies is $41,629,987 and the liabilities to the public $62,967,156, as against $40,108,161 of liabilities to shareholders and $59,540,175 of liabilities to the public of the sixty-four companies reporting for 1888.

The amount of secured loan assets of the seventy-one companies is $94,666,887 and of property assets $9,930,256, as against $89,042,190 of secured loan assets and $10,606,146 of property assets for the sixty-four companies reporting in 1888.

The amount of dividend declared by the seventy-one companies is $2,202,217, being at the average rate of 7.17 per cent. on the amount of paid up stock. The amount loaned during the year was $21,795,945; the amount received from borrowers $21,353,871; and the total amount invested and secured by mortgage $91,574,215. The amount of deposits received was $24,734,347; deposits repaid, $24,583,550; debentures issued, $11,337,938, and debentures repaid, $7,578,661. The total amount of debentures issued by the companies is $44,335,081, of which $7,622,256 is payable in Canada and $36,712,825 elsewhere. The amount of interest paid and accrued on debentures for the year was $2,015,084, being at the average rate of 4.545 per cent., while the amount paid on deposits was $680,570, being at the average rate of 4.017 per cent.

For the purpose of showing the growth of the business of companies, the following table has been prepared for fifty-five companies which have reported their affairs for the years 1887, 1888 and 1889 :

Schedule.	1889.	1888.	1887.
	$	$	$
Capital subscribed	60,351,871	57,379,159	56,114,310
Liabilities to stockholders	38,591,870	36,895,451	35,910,563
Liabilities to the public	57,073,892	52,948,095	51,177,104
Total liabilities	95,665,762	89,843,546	87,087,667
Secured loan assets	87,129,592	81,235,305	79,035,804
Property assets	8,536,170	8,608,241	8,051,863
Total assets	95,665,762	89,843,546	87,087,667
Dividend declared	2,098,814	2,035,446	2,021,207
Loaned during the year	20,391,868	17,049,796	17,162,412
Received from borrowers	19,965,687	18,839,040	18,987,927
Total invested and secured by mortgage	84,171,465	78,776,916	75,494,963
Deposits received	24,419,674	22,918,698	25,283,071
Deposits repaid	24,357,831	24,188,350	25,283,441
Debentures issued	10,505,870	7,958,544	6,263,884
Debentures repaid	6,868,817	5,123,871	4,346,294
Reserve fund	8,371,340	7,667,885	7,254,105
Stock paid up fully and in part	28,397,572	27,346,847	26,772,028
Debentures payable in Canada	7,089,355	5,949,676	5,500,622
Debentures payable elsewhere	31,601,564	29,078,893	26,722,070
Total debentures	38,690,919	35,028,569	32,222,692
Interest paid and accrued—			
On debentures	1,741,483	1,592,484	1,552,621
On deposits	676,871	708,708	685,138

Taking those fifty-five companies which made returns for the years 1887, 1888 and 1889, it will be observed that the liabilities to stockholders increased in the two years by $2,681,307 and the liabilities to the public by $5,896,788, while the increase of secured loan assets in the same period was $8,093,788 and of property assets $484,307. The amount loaned in 1889 was $3,229,456 more than in 1887, and the total amount invested and secured by mortgage at the end of 1889 was $8,676,502 more than at the end of 1887 ; yet the amount of dividend declared in 1889 was only $77,607 more than in 1887, although the paid up stock had increased in the interval from $26,772,028 in 1887 to $28,397,572 in 1889. The reserve fund of the companies, however, had increased in the same period from $7,254,105 to $8,371,340. With the increase in the amount loaned there is a corresponding increase in the debentures issued, the total in 1887 having been $6,263,884 and in 1889 $10,505,870, while the amount of debentures repaid was $4,346,294 in 1887 and $6,868,817 in 1889. The total amount of debentures outstanding at the close of 1887 was $32,222,692 and in 1889 $38,690,919, of which amounts only $5,500,622 was payable in Canada in the former year and $7,089,355 in the latter. It thus appears that while 83 per cent. of the total debentures were payable elsewhere than in Canada in 1887, the proportion in 1889 so payable was about 82 per cent. The interest paid and accrued on debentures issued by the fifty-five companies in 1887 was $1,552,621 and in 1889 it was $1,741,483, being for the former year at the rate of 4.818 per cent. and for the latter year at the rate of 4.501 per cent. The total amount of deposits received was $25,283,071 in 1887 and $24,419,674 in 1889, while the amount of deposits repaid was $25,283,441 in 1887 and

$24,357,831 in 1889. The amount of interest paid on deposits in the former year was, $685,138, being at the rate of 3.908 per cent., and in the latter year $676,871, being at the rate of 4.023 per cent.

For further comparison the following statement is prepared of sixty-four companies which reported for the years 1888 and 1889 :*

Schedule.	1889.	1888.
	$	$
Capital subscribed	69,045,671	67,939,559
Liabilities to stockholders	41,485,965	40,108,161
Liabilities to the public	62,943,603	59,540,175
Total liabilities	104,429,568	99,648,336
Secured loan assets	94,502,621	89,042,190
Property assets	9,926,947	10,606,146
Total assets	104,429,568	99,648,336
Dividend declared	2,201,454	2,152,377
Loaned during the year	21,705,423	18,567,954
Received from borrowers	21,330,361	20,393,404
Total invested and secured by mortgage	91,413,189	86,728,523
Deposits received	24,721,232	23,001,584
Deposits repaid	24,580,790	24,261,630
Debentures issued	11,337,938	8,736,777
Debentures repaid	7,578,661	5,944,268
Reserve fund	8,711,107	8,030,118
Stock paid up fully and in part	30,594,567	30,088,097
Debentures payable in Canada	7,622,256	6,578,122
Debentures payable elsewhere	36,712,825	34,857,050
Total debentures	44,335,081	41,435,172
Interest paid and accrued—		
On debentures	2,015,084	1,906,741
On deposits	680,570	710,636

Taking again these sixty-four companies which reported for the years 1888 and 1889, it will be observed that the amount of paid up capital in the former year was $30,088,097, and in the latter $30,594,567. The liabilities of those companies to stockholders increased in the year by $1,377,804 and the liabilities to the public by $3,403,428. The amount of secured loan assets increased by $5,460,431, while the property assets show a decrease of $679,199. The amount loaned during the year rose from $18,567,954 to $21,705,423, and the total amount invested and secured by mortgage from $86,728,523 to $91,413,189. The reserve fund of the sixty-four companies was $8,030,118 in 1888 and $8,711,107 in 1889, being an increase of $680,989. The amount of debentures issued in 1888 was $8,736,777 and in 1889 $11,337,938, while the total amount of debentures outstanding was in the former year $41,435,172 and in the latter $44,335,081. Of these debentures the amount payable in Canada in 1888 was only $6,578,122, and in 1889 $7,622,256, being only 15 per cent. of the total issue in the former year and 17 per cent. in the latter. The amount of interest paid and accrued on debentures in the sixty-four companies was $1,906,741 in 1888, being at the rate of 4.601 per cent., and $2,015,084 in 1889, being at the rate of 4.545 per cent. The amount of interest on deposits in 1888 was $710,636 and in 1889 $680,570, being at the rate of 4.045 per cent. in the former year and 4.017 in the latter.

* The amalgamation of the two Peterborough companies reduces the 64 reporting in 1888 to 63 in 1889. In the comparison of 55 companies a portion of the increase is due to this combination as the Real Estate Association did not report in 1887 and was not consolidated in 1888.

LOAN AND INVESTMENT COMPANIES.

TABLE No. 1.—Companies reporting Statement of Affairs as required by Chapter 169, Section 83, *et. seq.*, R. S. O. 1887, or by provisions of Special Charters.

Number.	Name of Company.	When organised.	President.	Manager.	Head Office.	For year ending—
1	Barrie Loan and Savings Company	April 14, 1881.	N. Dyment	Robert Laidlaw	Barrie	Dec. 31, 1889.
2	Hastings Loan and Investment Society	January, 1876.	Hon. Mackenzie Bowell	J. P. C. Phillips	Belleville	Dec. 31, 1889.
3	Royal Loan and Savings Company	June, 1, 1876.	T. S. Shenston	R. S. Schell	Brantford	Dec. 31, 1889.
4	Chatham Loan and Savings Company	Sept. 28, 1881.	Archibald Bell	S. F. Gardiner	Chatham	Dec. 31, 1889.
5	Huron and Bruce Loan and Investment Company	June, 1885.	Joseph Williams	Horace Horton	Goderich	Dec. 31, 1889.
6	Guelph and Ontario Investment and Savings Society.	..... 1876.	David Stirton	William Ross	Guelph	Dec. 31, 1889.
7	Hamilton Provident and Loan Society	Sept., 1871.	George H. Gillespie	H. D. Cameron	Hamilton	Dec. 31, 1889.
8	Hamilton Homestead Loan and Savings Society	Jan. 1, 1883.	James E. O'Reilly	I. A. Studdart	Hamilton	Dec. 31, 1889.
9	Landed Banking and Loan Company	February, 1877.	Matthew Leggat	Samuel Slater	Hamilton	Dec. 31, 1889
10	Frontenac Loan and Investment Society	Dec., 1863.	James A. Henderson	Thomas Briggs	Kingston	Dec. 31, 1889.
11	Ontario Building and Savings Society	June, 26, 1874.	C. V. Price	James McArthur	Kingston	Dec. 31, 1889.
12	Agricultural Savings and Loan Company	May, 1872.	William Glass	W. A. Lipsey	London	Dec. 31, 1889.
13	Canadian Savings and Loan Company	October, 1875.	James Durand	H. W. Blinn	London	May 31, 1889.
14	Dominion Savings and Investment Society	April, 1872.	Robert Reid	F. B. Leys	London	Dec. 31, 1889.
15	Empire Loan Company of Canada	April, 15, 1881.	F. R. Eccles	George Pritchard	London	Dec. 31, 1889.
16	Huron and Erie Loan and Savings Company	..... 1864.	John W. Little	George A. Somerville	London	Dec. 31, 1889.
17	London Loan Company of Canada	..... 1877.	Thomas Kent	Malcolm John Kent	London	Dec. 31, 1889.
18	London Stock Company of Ontario	..... 1884.	.....	M. J. Kent	London	Dec. 31, 1889.
19	Ontario Investment Association	April, 1880.	Wm. J. McIntosh	Alfred A. Booker	London	Dec. 31, 1889.
20	Ontario Loan and Debenture Company	October, 1870.	Joseph Jeffery	William F. Bullen	London	Dec. 31, 1889.
21	Royal Standard Loan Company	August, 1877.	C. N. Spencer	D. McMillan	London	Dec. 31, 1889.
22	Orangeville Building and Loan Association	..... 1873.	James S. Fead	Francis Irwin	Orangeville	Dec. 31, 1889.
23	Ontario Loan and Savings Company	..... 1873.	W. F. Cowan	T. H. McMillan	Oshawa	Dec. 31, 1889.
24	Civil Service Building and Savings Society	..... 1865.	Henry Hartney	J. M. Courtney	Ottawa	Dec. 31, 1889.
25	Dominion Investment Loan and Savings Company	Dec. 1, 1886.	James Gillies	James Gillies	Ottawa	Dec. 31, 1889.
26	Metropolitan Loan and Savings Company	August, 1870.	H. V. Noel	C. R. Cunningham	Ottawa	Dec. 31, 1889.
27	Ottawa Building and Loan Society	June 6, 1884.	A. Smirle	C. A. Douglas	Ottawa	May 31, 1889.
28	Owen Sound Grey and Bruce Loan and Savings Company	April 15, 1889.	William Roy	W. P. Telford	Owen Sound	Dec. 31, 1889.
29	Central Canada Loan and Savings Company	April, 1, 1884.	George A. Cox	Fred G. Cox	Peterborough	Dec 31, 1889
30	Crown Savings and Loan Company	Jan. 30, 1882.	John H. Fairbank	John Fraser	Petrolea	Dec. 31, 1889.
31	Midland Loan and Savings Company	..... 1873.	John Mulligan	George M. Furby	Port Hope	Dec. 31, 1889.
32	Security Loan and Savings Company	March 15, 1870.	Thomas R. Merritt	A. M. Macrae	St. Catharines	Dec. 31, 1889.
33	Elgin Loan and Savings Company	May 1, 1879.	Edward Miller	George Rowley	St. Thomas	Dec. 31, 1889.
34	Southern Loan and Savings Company	..... 1870.	Samuel Eccles	A. J. Allworth	St. Thomas	Dec. 31, 1889.
35	Southwestern Farmers' and Mechanics' Savings and Loan Society	February, 1875.	E. W. Gustin	George Suffel	St. Thomas	Dec. 31, 1889.

36	Star Loan Company	August 31, 1881.	G. E. Casey, M.P	D. M. Tait	St. Thomas	Feb. 28, 1890.
37	The St. Thomas Loan Company	August, 1887.	George Scott	Alexander E. Wallace	St. Thomas	Dec. 31, 1889.
38	Huron and Lambton Loan and Savings Company	Nov., 1877.	James Flintoft, Sheriff	Michael Fleming	Sarnia	Dec. 31, 1889.
39	Lambton Loan and Investment Company	1884.	Chas. Mackenzie, M.P.P.	Robert S. Gurd	Sarnia	June 30, 1889.
40	British Mortgage Loan Company	October, 1877.	James Trow, M.P.	William Buckingham	Stratford	Dec. 31, 1889.
41	Arcanum Loan and Savings Association	February, 1889.	A. K. McIntosh	Appleton J. Pattison	Toronto	Dec. 31, 1889.
42	Bristol and West of England Canadian Land Mortgage and Investment Company	March 25, 1878.	Sir George W. Edwards. T. S. Stayner	William Smith & Co. William Kersteman, jr	Bristol, Eng. Toronto	Dec. 31, 1889.
43	British Canadian Loan and Investment Company	July 1, 1877.	A. H. Campbell	R. H. Tomlinson	Toronto	Dec. 31, 1889.
44	Building and Loan Association	March 1, 1870.	L. W. Smith, Q.C., D.C.L.	Walter Gillespie	Toronto	Dec. 31, 1889.
45	Canadian Homestead Loan and Savings Association.	Sept., 1886.	John Hillock	Appleton J. Pattison	Toronto	Sept. 30, 1889.
46	Canada Landed Credit Company	1858.	John Lang Blaikie	David McCee	Toronto	Dec. 31, 1889.
47	Canada Permanent Loan and Savings Company	1855.	John Herbert Mason	John Herbert Mason	Toronto	Dec. 31, 1889.
48	City and County Loan Association	Jan. 26, 1889.	Ambrose Kent	J. C. Laidlaw	Toronto	Dec. 31, 1889.
49	Dovercourt Land, Building and Savings Company	Dec. 16, 1885.	James Brandon	A. G. Lightbourn	Toronto	Dec. 31, 1889.
50	Farmers' Loan and Savings Company	October, 1871.	William Mulock, M.P	George S. C. Bethune	Toronto	April 30, 1889.
51	Freehold Loan and Savings Company	May, 1859.	A. T. Fulton	Hon. S. C. Wood	Toronto	April 30, 1889.
52	Home Savings and Loan Company	April 25, 1877.	Hon. Frank Smith	James Mason	Toronto	Dec. 31, 1889.
53	Imperial Loan and Investment Company	Sept. 14, 1869.	Sir. Alex. Campbell	E. H. Kertland	Toronto	Dec. 31, 1889.
54	Land Security Company	Dec., 1873.	Major George Greig	W. Innes Mackenzie	Toronto	Dec. 31, 1889.
55	London and Canadian Loan and Agency Company	Jan. 1, 1873.	Sir W. P. Howland, C.B.	James Ferrier Kirk	Toronto	Aug. 31, 1889.
56	London and Ontario Investment Company	May 15, 1877.	Hon. Frank Smith	Alfred Morgan Cosby	Toronto	June 30, 1889.
57	National Investment Company of Canada	1876.	John Hoskin, LL.D., Q.C.	Andrew Rutherford	Toronto	Dec. 31, 1889.
58	North British Canadian Investment Company	Oct. 14, 1876.	Peter Sturrock	James L. Scarth	Toronto Glasgow, Scot	Dec. 31, 1889.
59	North of Scotland Canadian Mortgage Company	Dec. 17, 1875.	James W. Barclay, M.P.	William Smith Osler and Hammond	Aberdeen, Scot Toronto	Nov. 11, 1889.
60	Ontario Industrial Loan and Investment Company	Jan. 5, 1880.	James Gormley	Edmund T. Lightbourn	Toronto	Dec. 31, 1889.
61	Peoples' Loan and Deposit Company	March, 1875.	William Elliot	James Watson	Toronto	Dec. 31, 1889.
62	Real Estate Loan Company of Canada	Dec., 1879.	T. R. Wadsworth	Benjamin Morton	Toronto	Dec. 31, 1889.
63	Royal Oak Building and Savings Society	Dec., 1886.	W. W. Ogden, M. D	Appleton J. Pattison	Toronto	Dec. 31, 1889.
64	Scottish Ontario and Manitoba Land Company	Dec. 15, 1879.	Robert Young	James L. Scarth	Glasgow, Scot Toronto	Dec. 31, 1889.
65	Toronto Land and Loan Company	May 27, 1881.	Arthur Harvey	W. C. Beddome	Toronto	Aug. 31, 1889.
66	Trust and Loan Company of Canada	Oct. 1, 1851.	Charles Morrison	W. W. Ravenhill William B. B. Simpson	London, Eng Toronto	Sept. 30, 1889.
67	Union Loan and Savings Company	March, 1865.	Francis Richardson	William Maclean	Toronto	Dec. 31, 1889.
68	Western Canada Loan and Savings Company	March, 1863.	Hon. George W. Allan	Walter S. Lee	Toronto	Dec. 31, 1889.
69	Workingmen's Savings and Loan Association	March, 1889.	E. F. Clarke, M.P.P	Appleton J. Pattison	Toronto	Dec. 31, 1889.
70	Oxford Permanent Loan and Savings Society	1865.	William Grey	William Grey	Woodstock	Dec. 31, 1889.
71	Sons of England Building, Loan and Savings Association	June 24, 1889.	Stephen B. Pollard, M.D.	John W. Carter	Toronto	Dec. 31, 1889.

LOAN AND INVESTMENT COMPANIES.

TABLE No. II.—Comparative statement of Liabilities and Assets of 64 companies reporting for 1888 and 1889.

Companies.	Liabilities.				Assets.			
	To stockholders.		To the public.		Secured loans.		Property.	
	1889	1888	1889	1888	1889	1888	1889	1888
	$	$	$	$	$	$	$	$
Barrie Loan, Barrie	130,461	130,209	43,898	41,301	174,074	171,189	285	321
Hastings Loan, Belleville	209,270	204,359	142,193	119,246	322,952	319,202	28,511	4,403
Royal Loan, Brantford	596,983	592,577	706,971	689,153	1,244,349	1,208,235	59,605	73,495
Chatham Loan, Chatham	107,235	87,853	219,642	191,233	310,219	251,320	16,658	27,766
Huron and Bruce, Goderich	150,548	133,270	72,611	74,938	220,459	190,076	2,700	18,132
Guelph & Ontario, Guelph	476,137	432,916	846,174	850,786	1,284,285	1,206,266	38,026	77,436
Hamilton Provident, Hamilton	1,398,557	1,379,198	2,288,261	2,248,173	3,368,144	3,383,865	318,674	243,506
Homestead Loan, Hamilton	98,166	97,051	.....	.....	95,633	94,368	2,533	2,683
Landed Banking, Hamilton	702,200	666,785	932,963	830,020	1,589,304	1,469,019	45,859	27,786
Frontenac Loan, Kingston	240,931	242,377	252,904	254,111	389,564	417,433	104,271	79,055
Ontario Building, Kingston	271,057	279,682	176,713	163,445	407,531	374,925	40,239	68,202
Agricultural Savings, London	746,227	739,705	950,402	848,340	1,600,358	1,514,147	96,271	73,898
Canadian Savings, London	873,674	858,708	820,834	817,145	1,676,587	1,627,935	17,921	47,918
Dominion Savings, London	1,006,895	1,030,054	948,637	961,177	1,904,794	1,930,299	50,738	60,932
Empire Loan, London	112,193	106,036	114,638	116,653	225,912	221,813	919	876
Huron and Erie, London	1,829,946	1,602,826	2,555,438	2,279,488	4,196,041	3,663,068	189,343	219,246
London Loan, London	698,155	692,125	626,464	547,722	1,316,838	1,189,043	7,781	50,804
London Stock, London	40,000	40,000	.....	.....	40,000	40,000	.....	.....
Ontario Invesm't, London	780,524	765,294	799,989	1,274,550	907,253	1,338,331	673,260	701,513
Ontario Loan, London	1,602,878	1,582,345	2,176,565	2,024,437	3,412,620	3,388,338	366,823	218,444
Royal Standard, London	204,696	198,061	180,534	177,516	369,852	355,992	15,378	19,585
Orangeville Bdg. Orangeville	22,389	22,020	56	1,338	22,217	23,253	228	105
Ontario Loan, Oshawa	377,628	374,512	532,910	525,306	842,313	881,027	68,225	18,791
Civil Service, Ottawa	23,077	14,214	.....	.....	20,118	41,079	2,959	3,135
Metropolitan Loan, Ottawa	363,675	365,095	27,473	29,810	278,242	283,921	112,906	110,984
Central Canada, Peterborough	1,025,427	599,261	1,616,383	633,167	2,579,185	1,191,424	62,627	41,004
Peterboro' R. Es., Peterborough	*	384,549	.....	893,941	.....	1,231,647	.....	46,843
Crown Savings, Petrolea	127,794	119,098	42,300	32,179	166,425	146,460	3,669	4,817
Midland Loan, Port Hope	373,379	367,425	664,198	589,149	1,010,544	912,485	27,033	44,089
Security Loan, St. Catharines	321,336	321,069	292,916	280,782	602,849	561,187	11,403	40,664
Elgin Loan, St. Thomas	191,233	175,901	130,574	122,495	316,430	283,243	5,377	15,153
Southern Loan, St. Thomas	465,331	464,000	253,586	279,099	714,938	713,493	3,979	29,606

*This company sold its assets to the Central Canada Loan and Savings Company during the year.

LOAN AND INVESTMENT COMPANIES.

TABLE No. II.—Comparative statement of Liabilities and Assets of 64 companies, etc.—*Continued.*

Companies.	Liabilities.				Assets.			
	To stockholders.		To the public.		Secured loans.		Property.	
	1889	1888	1889	1888	1889	1888	1889	1888
	$	$	$	$	$	$	$	$
Southwst'n Fm's, St. Thomas....	149,901	149,367	105,863	99,309	255,422	236,892	342	11,784
Star Loan, St. Thomas....	177,980	171,666	106,103	115,418	279,964	281,211	4,119	5,873
St. Thomas Loan, St. Thomas ...	79,488	36,942	78,419	.....	153,703	33,140	4,204	3,802
Huron & Lambton, Sarnia....	377,265	374,783	319,943	272,462	689,262	644,296	7,946	2,949
Lambton Loan, Sarnia	625,937	601,391	648,113	644,523	1,260,389	1,161,557	13,661	84,357
British Mortgage, Stratford	364,152	357,282	455,070	340,415	819,222	695,153	.....	2,544
Bristol & West of Eng., Toronto.	156,606	154,135	1,087,583	1,081,914	1,226,958	1,109,327	17,231	126,722
British Canadian, Toronto	413,838	404,047	1,361,406	1,237,418	1,718,424	1,483,891	56,820	157,574
Building & Loan, Toronto	917,705	910,840	835,561	784,665	1,427,411	1,496,540	325,855	198,965
Can. Homestead, Toronto	50,849	37,796	10,026	10,495	60,750	45,400	125	2,891
Canada Landed, Toronto ..	888,446	872,088	1,484,431	1,426,669	2,223,808	2,182,801	149,069	115,956
Can. Permanent, Toronto	4,101,432	4,071,305	7,163,903	6,515,314	10,809,378	10,027,868	455,957	553,751
Dovercourt Land, Toronto	99,859	83,240	46,836	39,538	109,755	84,003	36,940	38,775
Farmers' Loan, Toronto	752,993	745,420	993,774	884,665	1,735,597	1,582,753	11,170	47,332
Freehold Loan, Toronto	2,030,606	1,867,642	3,831,037	3,526,212	5,489,144	5,084,889	372,499	308,965
Home Savings, Toronto	279,382	265,315	1,792,873	1,552,817	1,880,294	1,648,362	191,961	169,770
Imperial Loan, Toronto	765,650	760,119	1,104,767	1,045,894	1,832,868	1,776,193	37,549	29,820
Land Security, Toronto	1,119,403	918,859	875,597	789,211	1,030,724	792,276	964,276	915,794
Lon. & Canadian, Toronto	1,099,549	1,113,723	3,523,244	3,490,887	3,834,965	3,659,269	787,828	945,341
Lon. & Ontario, Toronto	638,422	626,828	2,248,122	2,265,761	2,757,070	2,659,969	129,474	232,620
National Invest., Toronto	480,056	473,934	1,116,558	1,092,135	1,545,926	1,474,487	50,688	91,582
North British, Toronto	618,020	630,675	1,784,878	1,800,266	2,213,143	1,966,538	189,755	464,403
North of Scotl'nd, Toronto	980,690	916,806	2,648,920	2,540,880	3,409,251	3,158,877	220,359	298,809
Ont. Industrial, Toronto	506,039	451,592	267,888	218,680	302,236	207,070	471,691	463,202
People's Loan, Toronto	738,278	732,314	605,228	562,347	1,328,715	1,244,923	14,791	49,738
Real Estate Loan, Toronto	479,139	483,187	286	284	169,189	235,669	310,236	247,802
Scottish, Ontario, Toronto ...	923,017	921,664	342,962	342,898	255,865	175,111	1,010,114	1,089,451
Toronto Land, Toronto	87,703	74,575	81,791	28,841	107,813	57,777	61,681	45,639
Trust and Loan, Toronto	2,382,356	2,366,975	4,016,256	3,719,984	5,078,027	5,081,516	1,320,585	1,005,443
Union Loan, Toronto	946,147	921,219	1,141,775	922,488	1,989,591	1,657,321	98,331	186,386
Western Canada, Toronto	2,421,644	2,247,733	4,351,844	4,196,486	6,545,469	6,149,741	228,019	294,478
Oxford Perman't, Woodstock	265,411	266,124	96,319	94,599	352,260	328,287	9,470	37,436
Totals.....	41,485,965	40,108,161	62,943,603	59,540,175	94,592,621	89,042,190	9,926,947	10,606,146

LOAN AND INVESTMENT COMPANIES.

TABLE No. III.—Comparative statement of dividends declared, amounts loaned during the year, amounts received from borrowers (principal and interest), and total amounts invested and secured by mortgage by the 64 companies reporting for 1888 and 1889.

Companies.	Dividend declared.		Loaned during the year.		Received from borrowers.		Total invested and secured by mortgage.	
	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.
	$	$	$	$	$	$	$	$
Barrie Loan, Barrie	8,213	8,168	22,913	38,223	30,285	40,920	174,074	171,189
Hastings Loan, Belleville	11,177	11,814	26,140	40,571	43,383	54,724	320,567	315,792
Royal Loan, Brantford	34,666	39,263	203,467	214,873	270,524	201,102	1,235,993	1,201,365
Chatham Loan, Chatham	6,775	5,379	94,627	47,544	54,620	38,581	309,742	250,778
Huron and Bruce, Goderich	8,359	7,147	29,854	34,024	12,480	9,984	220,459	181,337
Guelph and Ontario Guelph	26,002	22,736	287,584	316,010	289,211	311,879	1,280,613	1,203,150
Hamilton Provident, Hamilton	77,000	77,000	624,245	751,309	804,486	825,166	3,355,211	3,320,068
Homestead Loan, Hamilton	.....	.....	10,718	17,032	5,776	4,524	95,633	94,368
Landed Banking, Hamilton	34,812	33,455	371,083	341,688	336,287	319,519	1,589,304	1,470,039
Frontenac Loan, Kingston	12,000	12,000	70,080	70,772	87,552	73,220	327,037	392,434
Ontario Building, Kingston	15,000	15,000	64,173	135,367	76,529	141,322	399,017	398,970
Agricultural Savings, London	43,406	43,304	301,479	216,853	314,983	334,654	1,579,776	1,487,964
Canadian Savings, London	48,221	47,743	242,036	190,843	322,416	344,139	1,550,225	1,511,519
Dominion Savings, London	55,921	55,646	276,468	391,896	436,086	662,833	1,810,553	1,866,342
Empire Loan, London	6,075	5,709	69,694	53,844	66,049	38,083	179,552	177,327
Huron and Erie, London	101,904	99,000	937,176	736,594	666,227	724,411	4,196,041	3,663,068
London Loan, London	44,121	43,638	290,526	200,805	260,329	334,471	1,219,099	1,205,618
London Stock, London	.....	.....	.....	100	.....	1,706	.....	.....
Ontario Investm'nt, London *	.....	.....	6,099	42,496	467,792	485,387	650,495	1,039,251
Ontario Loan, London	84,000	84,000	588,325	619,880	798,578	654,859	3,379,305	3,341,030
Royal Standard, London	10,641	10,340	52,106	23,670	62,783	68,983	350,611	344,670
Orangeville Build'g, Orangeville	1,254	1,234	93	6,477	2,264	3,060	22,217	23,253
Ontario Loan, Oshawa	20,949	20,949	102,045	88,895	134,307	163,888	812,383	784,106
Civil Service, Ottawa	1,493	3,110	520	1,260	24,425	18,878	19,834	41,079
Metropolitan Loan, Ottawa	18,635	18,635	47,061	57,777	73,234	77,681	255,603	261,701
Central Canada, Peterborough	47,739	30,000	1,684,371	713,401	594,898	866,539	2,135,894	780,213
Peterboro' R'l Est'e Peterborough†	.....	17,373	.....	208,635	.....	367,691	.....	1,231,647
Crown Savings, Petrolea	6,801	6,982	51,606	24,231	41,981	23,933	157,517	138,954
Midland Loan, Port Hope	21,000	20,312	202,514	153,444	178,955	146,104	992,804	899,308
Security Loan, St. Catharines	19,191	19,191	134,761	149,603	122,072	132,216	596,593	580,052
Elgin Loan, St. Thomas	10,092	9,407	123,682	19,701	103,838	61,587	315,323	281,847
Southern Loan, St. Thomas	28,000	28,000	101,977	83,532	139,709	106,460	707,188	707,110

*In liquidation. †This company sold its assets to the Central Canada Loan and Savings Company during the year.

LOAN AND INVESTMENT COMPANIES.

TABLE No. III.—Comparative statement of dividends declared, etc.—*Continued.*

Companies.	Dividend declared.		Loaned during the year.		Received from borrowers.		Total invested and secured by mortgage.	
	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.
	$	$	$	$	$	$	$	$
S. Western Farmers' St. Thomas	9,397	9,318	56,219	36,767	52,016	56,502	251,972	234,132
Star Loan, St. Thomas	9,864	9,407	46,299	44,924	65,628	37,167	273,464	276,138
St. Thomas Loan, St. Thomas	3,673	779	107,855	34,987	18,897	3,257	153,303	32,540
Huron and Lambton, Sarnia	22,770	22,728	156,072	94,386	152,301	109,274	588,639	543,394
Lambton Loan, Sarnia	35,550	33,246	213,918	212,760	259,221	244,900	1,174,299	1,145,902
British Mortgage, Stratford	20,700	20,480	223,988	127,811	143,350	168,655	818,922	694,702
Bristol & W. of England, Toronto	10,639	10,639	234,073	229,431	290,584	310,804	1,170,719	1,139,383
British Canadian, Toronto	22,580	22,570	274,264	182,006	236,399	271,124	1,628,005	1,491,507
Building and Loan, Toronto	45,000	45,000	331,079	289,973	354,126	328,261	1,427.411	1,496,540
Canadian Homestead, Toronto	.....	.....	29,250	15,600	3,292	2,298	60,750	45,400
Canada Landed, Toronto	46,480	46,480	252,550	237,547	370,911	325,200	2,199,320	2,177,205
Canada Permanent, Toronto	300,000	276,000	2,276,984	2,122,103	2,310,989	1,910,937	10,794,231	9,967,219
Dovercourt Land, Toronto	6,364	4,427	.....	.....	.....	.....	106,170	82,610
Farmers' Loan, Toronto	42,800	42,800	391,567	308,119	350,170	338,859	1,727,280	1,578,168
Freehold Loan, Toronto	124,241	120,000	1,459,559	823,144	1,343,874	903,783	5,442,510	5,063,758
Home Savings, Toronto	10,500	10,500	1,586,866	1,387,119	1,429,316	1,455,912	798,398	705,067
Imperial Loan Toronto	43,887	43,885	453,068	469,764	433,090	392,850	1,819,397	1,764,457
Land Security, Toronto	46,721	38,511	619,854	476,965	439,766	235,342	1,095,443	837,649
London and Canadian, Toronto	63,000	70,000	608,605	605,581	867,113	950,069	3,758,802	3,739,168
London and Ontario, Toronto	34,716	34,583	360,305	320,177	565,257	392,407	2,757,070	2,604,140
National Investm't, Toronto	25,500	25,500	316,076	299,236	346,029	257,066	1,543,092	1,472,220
North British, Toronto	24,333	24,333	518,968	718,430	510,544	474,961	2,212,657	2,136,213
North of Scotland, Toronto	66,917	64,667	841,811	486,653	821,920	388,242	3,408,729	3,158,877
Ontario Industrial, Toronto	21,892	21,681	174,431	108,974	79,265	73,892	295,827	198,911
Peoples' Loan, Toronto	41,745	41,480	297,205	242,067	312,866	295,645	1,320,136	1,254,446
Real Estate Loan, Toronto	.....	.....	72,894	20,504	50,668	29,343	165,414	235,669
Scottish Ontario, Toronto	9,125	9,125	.....	.....	.....	.....	255,865	238,971
Toronto Land, Toronto	4,631	3,011	64,695	9,528	19,679	13,959	107,813	57,777
Trust and Loan, Toronto	94,900	94,900	776,601	917,430	858,194	1,018,561	5,073,797	4,833,988
Union Loan, Toronto	52,999	51,857	672,855	435,998	540,781	467,659	1,911,857	1,709,598
Western Canada, Toronto	141,885	141,855	1,224,811	1,303,682	1,231,551	1,250,667	6,491,192	6,118,983
Oxford Permanent, Woodstock	15,198	16,080	45,278	14,938	50,505	47,304	342,042	328,192
Totals	2,201,454	2,152,377	21,705,423	18,567,954	21,330,361	20,393,404	91,413,189	86,728,523

LOAN AND INVESTMENT COMPANIES.

TABLE No. IV.—Comparative statement of amounts of deposits (received and repaid) and of debentures (issued and repaid) by the 64 companies reporting for 1888 and 1889.

Companies.	Deposits—				Debentures—			
	Received.		Repaid.		Issued.		Repaid.	
	1889.	1888.	1889.	1888.	1889.	1888	1889.	1888.
	$	$	$	$	$	$	$	$
Barrie Loan, Barrie	67,608	61,030	70,134	60,044	.....	.....	.....	.....
Hastings Loan, Belleville	121,964	210,165	116,684	235,301	48,667	.....	.....	.....
Royal Loan, Brantford	828,829	786,082	820,665	762,069	111,712	189,637	101,909	119,802
Chatham Loan, Chatham	424,160	380,072	396,058	364,533	300	.....	.....	.....
Huron and Bruce, Goderich	125,503	130,911	135,755	120,845	.....	.....	.....	.....
Guelph and Ontario, Guelph	753,976	820,567	779,928	784,029	265,760	338,210	246,091	368,591
Hamilton Provident, Hamilton	962,151	1,200,202	1,076,312	1,295,423	326,045	435,146	193,555	223,636
Homestead Loan, Hamilton	25,084	17,991	28,841	17,474	.....	.....	.....	.....
Landed Banking, Hamilton	1,424,520	1,206,959	1,349,220	1,157,284	104,184	144,128	76,079	76,700
Frontenac Loan, Kingston	352,892	317,820	361,177	333,023	.....	.....	.....	.....
Ontario Building, Kingston	361,326	349,465	353,118	351,331	.....	.....	.....	.....
Agricult'ral Savings, London	624,915	712,605	592,176	768,136	152,197	111,194	105,160	86,465
Canadian Savings, London	1,023,848	1,145,392	1,020,300	1,194,518	22,576	24,286	22,386	23,986
Dominion Savings, London	750,771	782,617	786,972	914,562	38,933	67,608	22,379	65,276
Empire Loan, London	267,117	209,445	273,492	198,435	.....	.....	.....	.....
Huron and Erie, London	1,134,875	954,507	1,129,475	1,006,724	386,292	204,037	164,090	39,693
London Loan, London	882,960	882,163	828,707	857,780	121,200	39,300	107,200	86,340
London Stock, London	.....	.....	.....	550	.....	.....	.....	.....
Ontario Inv'stment,* London	.....	380	440	9,390	320,000	55,000	790,842	471,380
Ontario Loan, London	575,326	574,615	565,127	596,703	365,436	316,427	224,305	225,123
Royal Standard, London	298,060	287,098	294,016	309,570	.....	.....	1,000	1,000
Orangeville Build'g, Orangeville	.....	.....	.....	.....	.....	.....	.....	.....
Ontario Loan, Oshawa	298,953	298,528	293,905	336,368	7,800	74,592	39,510	57,631
Civil Service, Ottawa	.....	.....	.....	.....	.....	.....	.....	.....
Metropolitan Loan, Ottawa	39,316	34,955	42,841	37,788	.....	.....	.....	.....
Central Canada, Peterborough	395,052	378,580	388,004	541,454	1,105,442	72,340	136,337	.....
Peterboro' Real Estate, Peterboro'†	.....	.....	.....	.....	.....	192,355	.....	236,471
Crown Savings, Petrolea	36,118	28,426	25,998	24,385	.....	.....	.....	.....
Midland Loan, Port Hope	399,378	476,874	439,107	493,049	297,677	245,176	188,508	229,824
Security Loan, St. Catharines	297,891	302,551	285,755	316,056	7,000	20,867	8,341	10,113
Elgin Loan, St. Thomas	269,925	219,121	261,845	228,349	.....	.....	.....	.....
Southern Loan, St. Thomas	314,301	362,411	339,473	329,875	.....	.....	.....	.....

* In liquidation. † This Company sold its assets to the Central Canada Loan and Savings Company during the year.

LOAN AND INVESTMENT COMPANIES.

TABLE No. IV.—Comparative statement of amounts of deposits (received and repaid).—*Continued*.

Companies.	Deposits— Received.		Deposits— Repaid.		Debentures— Issued.		Debentures— Repaid.	
	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.
	$	$	$	$	$	$	$	$
Southw'tn Farmers', St. Thomas	122,483	119,846	127,816	123,504				
Star Loan, St. Thomas	109,648	126,228	118,910	111,072				
St. Thomas Loan, St. Thomas	182,837		115,845					
Huron and Lambton, Sarnia	447,146	327,617	386,177	314,614				
Lambton Loan Sarnia	598,476	680,597	618,358	830,738	77,037	137,434	61,620	25,108
British Mortgage, Stratford	567,309	436,212	478,836	441,252				
Bristol & W. of Eng., Toronto					106,365	72,270	98,063	63,997
British Canadian, Toronto			260	163	219,123	157,248	85,517	133,046
Building and Loan, Toronto	892,668	753,503	898,023	826,273	268,175	69,931	211,843	46,887
Canadian Homest'd, Toronto	26,683	21,856	13,871	8,630				
Canada Landed, Toronto					367,506	373,753	306,580	323,635
Canada Permanent, Toronto	513,541	301,585	459,913	353,750	1,068,282	1,081,732	507,836	347,860
Dovercourt Land, Toronto					9,500		2,500	
Farmers' Loan, Toronto	451,218	737,624	512,984	778,701	167,295	134,686	500	8,707
Freehold Loan, Toronto	664,650	477,226	701,871	753,907	690,928	819,185	386,907	223,633
Home Savings, Toronto	4,142,252	3,407,775	3,902,196	3,467,992				
Imperial Loan, Toronto	310,077	250,677	361,489	264,918	157,227	132,877	56,493	37,377
Land Security, Toronto	371,057	277,205	381,648	177,493	347,285	251,500	208,250	202,700
London & Canadian, Toronto					1,114,355	470,417	1,034,385	468,121
London and Ontario, Toronto					422,099	263,762	403,527	270,231
National Investm'nt, Toronto					163,999	199,835	149,323	94,020
North British, Toronto	24,333		22,387	3,893	145,513	108,906	172,377	121,032
North of Scotland, Toronto					604,474	703,301	495,947	610,363
Ontario Industrial, Toronto	101,113	65,237	111,232	90,865				
Peoples' Loan, Toronto	892,677	823,082	921,901	854,809	56,700	10,900	6,700	11,700
Real Estate Loan, Toronto								
Scottish Ontario, Toronto	97		462		45,333	55,962	48,423	59,617
Toronto Land, Toronto	833		491				1,550	
Trust and Loan, Toronto					677,033	199,144	434,415	75,093
Union Loan, Toronto	514,051	446,441	515,135	531,412	321,770	235,598	117,361	75,622
Western Canada, Toronto	635,320	513,533	778,003	586,319	626,668	708,033	360,852	423,488
Oxford Permanent, Woodstock	95,944	103,808	98,357	96,277				
Totals	24,721,232	23,001,584	24,580,790	24,261,630	11,337,938	8,736,777	7,578,661	5,944,268

LOAN AND INVESTMENT COMPANIES.

TABLE No. V.—Statement of affairs showing the capital stock, liabilities and assets of 71 Loan and Investment Companies in the Province of Ontario for the year 1889, as required to be furnished by Chapter 169, Section 83, R. S. O. 1887, or by provisions of Special Charters.

Schedule.	Barrie Loan and Savings Company, Barrie.	Hastings Loan and Investment Society, Belleville.	Royal Loan and Savings Company, Brantford.	Chatham Loan and Savings Company, Chatham.	Huron and Bruce Loan and Investment Company, Goderich.	Guelph and Ontario Investment and Savings Society, Guelph.	Hamilton Provident and Loan Society, Hamilton.
Capital Stock.	$	$	$	$	$	$	$
Capital authorised	250,000	250,000	500,000	1,000,000	500,000	500,000	1,500,000
Capital subscribed	250,000	225,000	500,000	316,900	196,000	494,300	1,500,000
Liabilities.							
Liabilities to stockholders	130,461	209,270	596,983	107,235	150,548	476,137	1,398,557
Stock fully paid up			490,550			321,800	1,000,000
Stock on which has been paid	117,500	188,196	5,463	102,635	145,188	26,603	100,000
Accumulating stock						10,543	
Reserve fund	8,500	14,000	73,000	4,600		101,000	235,000
Dividends declared and unpaid	4,112	5,611	17,346		4,286	13,988	38,500
Contingent fund and unappropriated profits	349	1,463	10,624		1,074	2,203	25,057
Liabilities to the public	43,898	142,193	706,971	219,642	72,611	846,174	2,288,261
Deposits	25,234	93,526	415,185	219,335	67,611	311,060	910,232
Debentures payable in Canada			284,778	307		520,067	272,470
Debentures payable elsewhere		48,667					*1,064,680
Interest on debentures and deposits due and accrued			6,801			15,047	12,836
Owing to banks	18,659				5,000		
Other liabilities	5		207				28,043
Total liabilities	174,359	351,463	1,303,954	326,877	223,159	1,322,311	3,686,818
Assets.							
Secured loan assets	174,074	322,952	1,244,349	310,219	220,459	1,284,285	3,368,144
Real estate of—							
General borrowers	174,074	320,567	1,235,993	309,742	220,459	1,280,613	3,355,211
Directors and officers of company							
Shareholders' stock		2,385	4,098	477		2,228	2,383
Directors and officers of company on their stock			4,258				300
Otherwise secured						1,444	10,250
Property assets	285	28,511	59,605	16,658	2,700	38,026	318,674
Municipal and school section securities, cash value						8,137	57,511
Office furniture and fixtures		1,638	286	551	590		
Cash on hand	285	3,184	1,537	1,735	585		2,129
Cash in banks		† 23,689	‡57,782	5,311	1,525	29,889	§170,034
Office premises				9,061			89,000
Real estate foreclosed							
Other property							
Total assets	174,359	351,463	1,303,954	326,877	223,159	1,322,311	3,686,818

*Including $378,383 of debenture stock. †Including $22,258 special deposit. ‡Including $20,000 special deposit. §Including $50,802 special deposits.

LOAN AND INVESTMENT COMPANIES.

TABLE No. V.—Statement of affairs showing capital stock, liabilities, etc.—*Continued.*

Schedule.	Hamilton Homestead Loan and Savings Society, Hamilton.	Landed Banking and Loan Company, Hamilton.	Frontenac Loan and Investment Society, Kingston.	Ontario Building and Savings Society, Kingston.	Agricultural Savings and Loan Company, London.	Canadian Savings and Loan Company, London.	Dominion Savings and Investment Society, London.
Capital Stock.	$	$	$	$	$	$	$
Capital authorised	1,000,000	700,000	Unlimited	250,000	1,000,000	Unlimited	1,000,0
Capital subscribed	286,382	700,000	200,000	250,000	630,200	750,000	1,000,000
Liabilities.							
Liabilities to stockholders	98,166	702,200	240,931	271,057	746,227	873,674	1,006,895
Stock fully paid up			200,000	250,000			
Stock on which has been paid	63,002	557,700			615,700	683,250	928,55
Accumulating stock		21,768			5,200	5,472	792
Reserve fund		93,000	30,000		103,000	170,000	
Dividends declared and unpaid		16,700	6,086	7,529	21,549		27,856
Contingent fund and unappropriated profits	35,164	13,032	4,845	13,528	778	14,952	49,697
Liabilities to the public		932,963	252,904	176,713	950,402	820,834	948,637
Deposits		596,173	252,888	176,642	601,467	638,450	546,325
Debentures payable in Canada		244,360			192,600	141,976	72,111
Debentures payable elsewhere		84,302			151,650	36,500	326,504
Interest on debentures and deposits due and accrued		7,118			3,624	3,908	3,697
Owing to banks							
Other liabilities		1,010	16	71	1,061		
Total liabilities	98,166	1,635,163	493,835	447,770	1,696,629	1,694,508	1,955,532
Assets.							
Secured loan assets	95,633	1,589,304	389,564	407,531	1,600,358	1,676,587	1,904,794
Real estate of—							
General borrowers	91,083	1,589,304	323,423	399,017	1,579,776	1,550,225	1,904,794
Directors and officers of company	4,550		3,614				
Shareholders' stock			17,445	6,249	19,504	124,679	
Directors and officers of company on their stock			19,729	2,265	1,078	856	
Otherwise secured			25,353			827	
Property assets	2,533	45,859	104,271	40,239	96,271	17,921	50,738
Municipal and school section securities, cash value		3,293		515	1,905	173	
Office furniture and fixtures	290		189	87	500		1,000
Cash on hand		6,940		42	6,434		
Cash in banks	1,035	32,426	25,625	33,831	58,618	7,342	49,738
Office premises			3,716		28,000	10,406	
Real estate foreclosed		3,200	34,860				
Other property	1,208		39,881	5,764	814		
Total assets	98,166	1,635,163	493,835	447,770	1,696,629	1,694,508	1,955,532

LOAN AND INVESTMENT COMPANIES.

TABLE No. V.—Statement of affairs showing capital stock, liabilities etc.—*Continued.*

Schedule.	Empire Loan Company of Canada, London.	Huron and Erie Loan and Savings Company, London.	London Loan Company of Canada, London.	London Stock Company of Ontario, London.	Ontario Investment Association, London.	Ontario Loan and Debenture Company, London.	Royal Standard Loan Company, London.
Capital Stock.	$	$	$	$	$	$	$
Capital authorised	1,000,000	2,500,000	Unlimited	100,000	2,750,000	Unlimited	1,000,000
Capital subscribed	215,000	2,500,000	679,700	100,000	2,665,600	2,000,000	240,000
Liabilities.							
Liabilities to stockholders	112,193	1,829,946	698,155	40,000	780,524	1,602,878	204,696
Stock fully paid up	75,600	1,000,000	.....	.....	.....	1,000,000	.....
Stock on which has been paid	28,270	239,455	627,950	40,000	780,524	200,000	174,800
Accumulating stock	.....	.....	2,911	.....	.....	.....	4,021
Reserve fund	8,267	536,068	65,000	.....	.....	360,000	19,500
Dividends declared and unpaid	.....	52,404	.....	.....	.....	42,000	5,239
Contingent funds and unappropriated profits	56	2,019	2,294	.....	.....	878	1,136
Liabilities to the public	114,638	2,555,438	626,464	.....	799,989	2,176,565	180,534
Deposits	108,526	1,138,605	440,947	.....	2,080	450,214	163,724
Debentures payable in Canada	.....	425,614	171,376	.....	160,000	67,200	16,400
Debentures payable elsewhere	.....	974,161	.....	.....	630,842	1,639,913	.....
Interest on debentures and deposits due and accrued	.....	17,058	2,803	.....	4,217	19,238	410
Owing to banks	5,722	.....	11,338	.....	.....	.....	.....
Other liabilities	390	.....	.....	.....	2,850	.....	.....
Total liabilities	226,831	4,385,384	1,324,619	40,000	1,580,513	3,779,443	385,230
Assets.							
Secured loan assets	225,912	4,196,041	1,316,838	40,000	907,253	3,412,620	369,852
Real estate of—							
General borrowers	183,182	4,196,041	1,216,009	.....	632,109	3,360,494	346,738
Directors and officers of company	.....	.....	3,090	.....	18,386	18,811	3,873
Shareholders' stock	42,730	.....	24,634	.....	21,457	28,799	10,822
Directors and officers of company on their stock	.....	.....	73,105	.....	.....	4,516	8,419
Otherwise secured	.....	.....	.....	40,000	235,301	.....	.....
Property assets	919	189,343	7,781	.....	673,260	366,823	15,37
Municipal and school section securities, cash value	.....	.....	.....	.....	1,186	14,288	.....
Office furniture and fixtures	507	.....	400	.....	.....	.....	300
Cash on hand	412	4,362	5,881	.....	.....	.....	21
Cash in banks	.....	104,511	.....	.....	4,934	239,760	12,057
Office premises	.....	19,000	.....	.....	.....	72,681	.....
Real estate foreclosed	.....	.....	.....	.....	.....	.....	3,000
Other property	.....	61,470	1,500	.....	*667,090	40,094	.....
Total assets	226,831	4,385,384	1,324,619	40,000	1,580,513	3,779,443	385,230

* Company in liquidation; this amount, $667,090, is the estimated loss in realising on assets.

LOAN AND INVESTMENT COMPANIES.

TABLE No. V.—Statement of affairs showing capital stock, liabilities, etc.—*Continued.*

Schedule	Orangeville Building and Loan Association, Orangeville.	Ontario Loan and Savings Company, Oshawa.	Civil Service Building and Savings Society, Ottawa.	Dominion Investment Loan and Savings Company, Ottawa.	Metropolitan Loan and Savings Company, Ottawa.	Ottawa Building and Loan Society, Ottawa.	Owen Sound Grey and Bruce Loan and Savings Company, Owen Sound.
Capital Stock.	$	$	$	$	$	$	$
Capital authorised	50,000	300,000	22,000	Unlimited	320,000	Unlimited	100,000
Capital subscribed	24,550	300,000	20,739	27,400	320,000	184,200	100,000
Liabilities.							
Liabilities to stockholders	22,389	377,628	23,077	18,311	363,675	68,007	32,381
Stock fully paid up	15,450		20,739	14,600			4,909
Stock on which has been paid	5,454	299,281		2,101	310,560	67,960	27,416
Accumulating stock				321	32		
Reserve fund	231	75,000	1,716		30,000		
Dividends declared and unpaid	1,254		622		9,318		658
Contingent fund and unappropriated profits		3,347		1,289	13,765	47	7
Liabilities to the public	56	532,910		2,092	27,473	7,964	12,694
Deposits		279,048			27,473		
Debentures payable in Canada		195,992					
Debentures payable elsewhere							
Interest on debentures and deposits due and accrued		2,258					
Owing to banks		55,612		286		7,900	12,647
Other liabilities	56			1,806		64	47
Total liabilities	22,445	910,538	23,077	20,403	391,148	75,971	45,075
Assets.							
Secured loan assets	22,217	842,313	20,118	20,320	278,242	75,731	45,208
Real estate of—							
General borrowers	22,217	810,383	19,834	18,770	248,896	55,500	45,208
Directors and officers of company		2,000			6,707	19,400	
Shareholders' stock		12,013	61	1,012	7,163		
Directors and officers of company on their stock		4,463	223		14,778		
Otherwise secured		13,454		538	698	831	
Property assets	228	68,225	2,959	83	112,906	240	467
Municipal and school section securities, cash value							
Office furniture and fixtures		500			460		
Cash on hand		272		79			6
Cash in banks	228	*56,453	2,959	4	3,621	240	
Office premises		11,000			16,116		
Real estate foreclosed					92,709		
Other property							467
Total assets	22,445	910,538	23,077	20,403	391,148	75,971	45,675

*Including $52,626 special deposit.

LOAN AND INVESTMENT COMPANIES.

TABLE No. V.—Statement of affairs showing capital stock, liabilities, etc.—*Continued.*

Schedule.	Central Canada Loan and Savings Company, Peterborough.*	Crown Savings and Loan Company, Petrolea.	Midland Loan and Savings Company, Port Hope.	Security Loan and Savings Company, St. Catharines.	Elgin Loan and Savings Company, St. Thomas.	Southern Loan and Savings Company, St. Thomas.	Southwestern Farmers and Mechanics' Savings and Loan Society, St. Thomas.
Capital Stock.	$	$	$	$	$	$	$
Capital authorised	2,000,000	1,000,000	380,000	300,000	625,000	Unlimited	Unlimited
Capital subscribed	2,000,000	165,650	380,000	275,000	625,000	400,000	157,150
Liabilities.							
Liabilities to stockholders	1,025,427	127,791	373,379	321,336	191,233	465,331	149,901
Stock fully paid up	500,000	79,800	280,000			400,000	
Stock on which has been paid	300,000	37,142	20,000	274,156	174,084		134,520
Accumulating stock							49
Reserve fund	180,000	7,000	60,000	34,000	16,000	62,000	9,200
Dividends declared and unpaid	23,390	3,477	10,561	9,595			4,687
Contingent fund and unappropriated profits	22,037	375	2,818	3,585	1,149	3,331	1,445
Liabilities to the public	1,616,383	42,300	664,198	292,916	130,574	253,586	105,863
Deposits	351,580	42,300	238,848	264,451	130,574	253,586	98,094
Debentures payable in Canada	368,750		409,214	28,465			
Debentures payable elsewhere	824,778						
Interest on debentures and deposits due and accrued	18,815		11,960				
Owing to banks			4,176				7,769
Other liabilities	52,460						
Total liabilities	2,641,810	170,094	1,037,577	614,252	321,807	718,917	255,764
Assets.							
Secured loan assets	2,579,183	166,425	1,010,544	602,849	316,430	714,938	255,422
Real estate of—							
General borrowers	2,135,894	165,405	992,804	596,593	312,748	707,188	251,972
Directors and officers of company		1,020			2,575		
Shareholders' stock			6,955	6,256	1,107	6,600	3,450
Directors and officers of company on their stock			10,225			1,150	
Otherwise secured	443,289		560				
Property assets	62,627	3,669	27,033	11,403	5,377	3,979	342
Municipal and school section securities, cash value				4,344			
Office furniture and fixtures		64	669	230			
Cash on hand	1,521		800				342
Cash in banks	61,106	3,605	6,880	6,742	631	3,979	
Office premises							
Real estate foreclosed			17,789		4,746		
Other property			895	87			
Total assets	2,641,810	170,094	1,037,577	614,252	321,807	718,917	255,764

*This Company purchased the assets of the Peterboro' Real Estate Investment Company during the year.

LOAN AND INVESTMENT COMPANIES.

TABLE No. V.—Statement of affairs showing capital stock, liabilities, etc.—*Continued.*

Schedule.	Star Loan Company, St. Thomas.	St. Thomas Loan Company, St. Thomas.	Huron and Lambton Loan and Savings Company, Sarnia.	Lambton Loan and Investment Company, Sarnia.	British Mortgage Loan Company, Stratford.	Arcanum Loan and Savings Association, Toronto.	Bristol and West of England Canadian Land, Mortgage and Investment Company, Toronto.
Capital Stock.	$	$	$	$	$	$	$
Capital authorised	270,000	500,000	1,000,000	1,000,000	5,000,000	1,000,000	2,433,333
Capital subscribed	237,700	175,500	398,100	450,000	450,000	86,200	664,908
Liabilities.							
Liabilities to stockholders	177,980	79,488	377,265	625,937	364,152	4,854	156,606
Stock fully paid up					128,600		
Stock on which has been paid	128,400	78,825	325,697	446,866	170,209		132,982
Accumulating stock	37,950					4,712	
Reserve fund	10,000		51,550	175,000	51,000		14,600
Dividends declared and unpaid					10,457		
Contingent fund and unappropriated profits	1,630	663	18	4,571	886	142	9,024
Liabilities to the public	106,103	78,419	319,943	648,113	455,070	346	1,087,583
Deposits	105,943	78,419	313,534	432,608	403,921		
Debentures payable in Canada				204,193			
Debentures payable elsewhere							1,063,832
Interest on debentures and deposits due and accrued				4,313	15,967		11,862
Owing to banks			6,409	6,999	35,182		
Other liabilities	160					346	11,889
Total liabilities	284,083	157,907	697,208	1,274,050	819,222	5,200	1,244,189
Assets.							
Secured loan assets	279,964	153,703	689,262	1,260,389	819,222	5,200	1,226,958
Real estate of—							
General borrowers	273,464	153,303	588,639	1,167,695	794,451	5,200	1,226,958
Directors and officers of company				6,604	24,471		
Shareholders' stock	6,500	400	32,035	16,476	300		
Directors and officers of company on their stock				515			
Otherwise secured			68,588	69,099			
Property assets	4,119	4,204	7,946	13,661			17,231
Municipal and school section securities, cash value							
Office furniture and fixtures				1,000			
Cash on hand			7,946	4,394			34
Cash in banks	1,416	4,204					16,496
Office premises	2,703			267			
Real estate foreclosed				8,000			
Other property							701
Total assets	284,083	157,907	697,208	1,274,050	819,222	5,200	1,244,189

LOAN AND INVESTMENT COMPANIES.

TABLE No. V.—Statement of affairs showing capital stock, liabilities, etc.—*Continued.*

Schedule.	British Canadian Loan and Investment Company, Toronto.	Building and Loan Association, Toronto.	Canadian Homestead Loan and Savings Association, Toronto.	Canada Landed Credit Company, Toronto.	Canada Permanent Loan and Savings Company, Toronto.	City and County Loan Association, Toronto.	Dovercourt Land, Building and Savings Company, Toronto.
Capital Stock.	$	$	$	$	$	$	$
Capital authorised	5,000,000	750,000	1,000,000	2,000,000	4,500,000	500,000	500,000
Capital subscribed	1,620,000	750,000	418,000	1,500,000	4,500,000	31,600	64,550
Liabilities.							
Liabilities to stockholders	413,838	917,705	50,849	888,446	4,101,432	6,505	99,859
Stock fully paid up	....	750,000	.....	.....	2,000,000	1,250	.....
Stock on which has been paid	322,570	.....	47,040	664,000	500,000	5,147	63,650
Accumulating stock	.....	.....	.....	.....	.....	.....	.....
Reserve fund	70,000	100,000	.....	166,000	1,340,000	.....	25,000
Dividends declared and unpaid	11,290	22,500	.....	25,776	150,016	.....	2,864
Contingent fund and unappropriated profits	9,978	45,205	3,809	32,670	111,416	108	8,345
Liabilities to the public	1,361,406	835,561	10,026	1,484,431	7,163,903	176	46,836
Deposits	10,249	227,002	.....	.....	1,018,649	.....	.....
Debentures payable in Canada	147,401	120,607	.....	32,670	510,160	.....	7,006
Debentures payable elsewhere	1,184,290	487,041	.....	1,449,121	*5,425,165	.....	.....
Interest on debentures and deposits due and accrued	14,278	.....	.....	299	185,871	.....	303
Owing to banks	.....	.....	2,002	.....	7,500	.....	.....
Other liabilities	5,188	911	8,024	2,341	16,558	176	39,533
Total liabilities	1,775,244	1,753,266	60,875	2,372,877	11,265,335	6,681	146,695
Assets.							
Secured loan assets	1,718,424	1,427,411	60,750	2,223,808	10,809,378	6,007	109,755
Real estate of—							
General borrowers	1,713,685	1,412,761	60,750	2,199,191	10,794,231	6,007	106,170
Directors and officers of company	.....	.....	.....	.....	.....	.....	.....
Shareholders' stock	1,634	14,650	.....	.....	15,147	.....	.....
Directors and officers of company on their stock	.....	.....	.....	.....	.....	.....	.....
Otherwise secured	3,105	.....	.....	24,617	.....	.....	3,585
Property assets	56,820	325,855	125	149,069	455,957	674	36,940
Municipal and school section securities, cash value	4,574	.....	.....	.....	220,280	.....	.....
Office furniture and fixtures	446	.....	125	.....	.....	34	.....
Cash on hand	526	1,630	.....	260	2,813	17	926
Cash in banks	36,215	29,928	.....	83,386	116,302	590	4,785
Office premises	.....	80,000	.....	40,000	115,064	.....	.....
Real estate foreclosed	.....	‡212,922	.....	17,617	.....	.....	.....
Other property	15,059	1,375	.....	7,806	1,498	33	†31,229
Total assets	1,775,244	1,753,266	60,875	2,372,877	11,265,335	6,681	146,695

* Including $578,063 of debenture stock. † Including $20,579 real estate. ‡ Acquired by foreclosure or otherwise.

LOAN AND INVESTMENT COMPANIES.

TABLE No. V.—Statement of affairs showing capital stock, liabilities, etc.—*Continued.*

Schedule.	Farmers' Loan and Savings Company, Toronto.	Freehold Loan and Savings Company, Toronto.	Home Savings and Loan Company, Toronto.	Imperial Loan and Investment Company of Canada, Toronto.	Land Security Company, Toronto.	London and Canadian Loan and Agency Company, Toronto.	London and Ontario Investment Company, Toronto.
Capital Stock.	$	$	$	$	$	$	$
Capital authorised	1,057,250	3,700,000	2,000,000	1,000,000	3,000,000	5,000,000	2,500,000
Capital subscribed	1,057,250	3,198,900	1,500,000	629,850	1,377,825	5,000,000	2,480,300
Liabilities.							
Liabilities to stockholders	752,993	2,030,606	279,382	765,650	1,119,403	1,099,549	638,422
Stock fully paid up	500,000	827,000	.....	.....	.....	.....	.....
Stock on which has been paid	111,430	474,380	150,000	626,200	489,445	700,000	496,060
Accumulating stock	.....	.....	.....	1,167	.....	.....	.....
Reserve fund	120,163	621,058	100,000	113,000	545,000	360,000	125,000
Dividends declared and unpaid	21,400	64,241	5,250	21,968	24,389	28,000	17,362
Contingent fund and unappropriated profits	.....	43,927	24,132	3,315	60,569	11,549	.....
Liabilities to the public	993,774	3,831,037	1,792,873	1,104,767	875,597	3,523,244	2,248,122
Deposits	457,142	779,515	1,733,245	93,368	218,678	.....	.....
Debentures payable in Canada	203,042	735,090	.....	192,659	470,035	20,000	385,500
Debentures payable elsewhere	312,245	2,238,222	.....	784,048	.....	*3,447,902	1,842,432
Interest on debentures and deposits due and accrued	21,345	78,210	57,128	26,199	6,702	25,018	17,537
Owing to banks	.....	.....	.....	8,493	.....	.....	.....
Other liabilities	.....	.....	2,500	.....	180,182	30,324	2,653
Total liabilities	1,746,767	5,861,643	2,072,255	1,870,417	1,995,000	4,622,793	2,886,544
Assets.							
Secured loan assets	1,735,597	5,489,144	1,880,294	1,832,868	1,030,724	3,834,965	2,757,070
Real estate of—							
General borrowers	1,727,280	5,442,510	773,363	1,819,397	1,030,724	3,758,802	2,757,070
Directors and officers of company	.....	.....	25,035	.....	.....	.....	.....
Shareholders' stock	8,317	40,087	2,167	10,976	.....	.....	.....
Directors and officers of company on their stock	.....	.....	.....	2,495	.....	.....	.....
Otherwise secured	.....	6,547	1,079,729	.....	.....	76,163	.....
Property assets	11,170	372,499	191,961	37,549	964,276	787,828	129,474
Municipal and school section securities, cash value	.....	1,346	47,065	500	.....	382,821	58,841
Office furniture and fixtures	365	4,302	1,900	700	.....	.....	2,486
Cash on hand	1,370	124	15,589	21,597	.....	.....	94
Cash in banks	6,964	238,896	90,957	14,752	62,997	83,820	51,855
Office premises	.....	67,247	15,850	.....	.....	108,393	.....
Real estate foreclosed	.....	60,584	.....	.....	.....	153,035	.....
Other property	2,471	.....	20,600	.....	†901,279	59,759	16,198
Total assets	1,746,767	5,861,643	2,072,255	1,870,417	1,995,000	4,622,793	2,886,544

* Including certificates payable at fixed dates. † Real estate.

LOAN AND INVESTMENT COMPANIES.

TABLE No. V—Statement of affairs showing capital stock, liabilities, etc.—*Continued.*

Schedule.	National Investment Company of Canada, Toronto.	North British Canadian Investment Company, Toronto.	North of Scotland Canadian Mortgage Company, Toronto.	Ontario Industrial Loan and Investment Company, Toronto.	People's Loan and Deposit Company, Toronto.	Real Estate Loan Company of Canada, Toronto.	Royal Oak Building and Savings Society, Toronto.
Capital Stock.	$	$	$	$	$	$	$
Capital authorised	2,000,000	2,433,333	3,650,000	500,000	600,000	2,000,000	1,000,000
Capital subscribed	1,700,000	2,433,333	3,406,667	466,800	600,000	735,100	87,350
Liabilities.							
Liabilities to stockholders	480,056	618,020	989,690	506,039	738,278	479,139	9,280
Stock fully paid up				38,000		401,300	
Stock on which has been paid	425,000	486,667	681,333	255,462	596,100	68,683	
Accumulating stock					1,738		8,693
Reserve fund	35,000	77,867	255,500	165,000	110,000		
Dividends declared and unpaid	13,051	12,759	34,067	10,967	20,864	129	
Contingent fund and unappropriated profits	7,005	†40,727	9,790	16,610	9,576	9,027	587
Liabilities to the public	1,116,558	1,784,878	2,648,920	267,888	605,228	286	
Deposits		3,893		74,204	465,664	286	
Debentures payable in Canada	107,269				136,800		
Debentures payable elsewhere	986,391	*1,762,765	2,644,157				
Interest on debentures and deposits due and accrued	8,649	10,665		1,778	2,318		
Owing to banks	4,450						
Other liabilities	9,799	7,555	4,763	191,906	446		
Total liabilities	1,596,614	2,402,898	3,629,610	773,927	1,343,506	479,425	9,280
Assets.							
Secured loan assets	1,545,926	2,213,143	3,409,251	302,236	1,328,715	169,189	8,200
Real estate of—							
General borrowers	1,516,092	2,212,657	3,408,729	254,998	1,320,136	165,414	8,200
Directors and officers of company	27,000			40,829			
Shareholders' stock				5,870	8,412	3,775	
Directors and officers of company on their stock							
Otherwise secured	2,834	486	522	539	167		
Property assets	50,688	189,755	220,359	471,691	14,791	310,236	1,080
Municipal and school section securities, cash value		15,682	113,810				
Office furniture and fixtures		243	1,320		564	325	
Cash on hand	252	3,434	73	104	1,000	44	
Cash in banks	3,987	71,197	9,183	29,977	13,227	2,661	1,080
Office premises			62,218				
Real estate foreclosed	46,449	52,677	33,755			236,904	
Other property		46,522		‡441,610		70,302	
Total assets	1,596,614	2,402,898	3,629,610	773,927	1,343,506	479,425	9,280

* Including $368,728 of debenture stock. † Including $12,653, payments in anticipation of call.
‡ Real estate.

LOAN AND INVESTMENT COMPANIES.

TABLE No. V—Statement of affairs showing capital stock, liabilities, etc.—*Continued.*

Schedule.	Scottish Ontario and Manitoba Land Company, Toronto.	Toronto Land and Loan Company, Toronto.	Trust and Loan Company of Canada, Toronto.	Union Loan and Savings Company, Toronto.	Western Canada Loan and Savings Company, Toronto.	Workingmen's Savings and Loan Association Toronto.	Oxford Permanent Loan and Savings Society, Woodstock.
Capital Stock.	$	$	$	$	$	$	$
Capital authorized	2,433,333	1,000,000	14,600,000	1,000,000	3,000,000	1,000,000	Unlimited
Capital subscribed	1,216,667	104,600	7,300,000	1,000,000	3,000,000	58,000	242,450
Liabilities.							
Liabilities to stockholders	923,017	87,703	2,382,356	946,147	2,421,644	2,633	965,411
Stock fully paid up				599,370	1,000,000		230,550
Stock on which has been paid	658,333	75,583	1,581,667	78,030	500,000		1,763
Accumulating stock						2,566	
Reserve fund	58,100	1,015	727,872	225,000	750,000		19,000
Dividends declared and unpaid	9,161		47,450	26,724	70,000		8,149
Contingent fund and unappropriated profits	§247,123	11,155	25,367	17,023	101,644	67	5,949
Liabilities to the public	342,962	81,791	4,016,256	1,141,775	4,351,844		96,319
Deposits	1,995	1,947		426,988	1,155,418		96,119
Debentures payable in Canada				162,968	615,182		
Debentures payable elsewhere	321,774		3,912,197	551,819	2,517,427		
Interest on debentures and deposits due and accrued	2,153				62,937		
Owing to banks	1,232	12,000			670		
Other liabilities	15,808	67,844	104,059		210		200
Total liabilities	1,265,979	169,494	6,398,612	2,087,922	6,773,488	2,633	361,730
Assets.							
Secured loan assets	255,865	107,813	5,078,027	1,989,591	6,545,469	2,400	352,260
Real estate of—							
General borrowers	255,865	107,813	5,073,797	1,911,857	6,491,192	2,400	342,042
Directors and officers of company							
Shareholders' stock				26,734	46,581		10,019
Directors and officers of company on their stock				1,000			
Otherwise secured			4,230	50,000	7,696		199
Property assets	1,010,114	61,681	1,320,585	98,331	228,019	233	9,470
Municipal and school section securities, cash value							
Office furniture and fixtures	155		1,189	1,226	2,221	44	276
Cash on hand	779		1,493	209	51		4
Cash in banks	29,227	4,924	†370,225	35,146	81,878	189	428
Office premises			63,442	61,043	118,539		7,762
Real estate foreclosed			116,950				
Other property	*979,953	56,757	‡767,286	707	25,330		1,000
Total assets	1,265,979	169,494	6,398,612	2,087,922	6,773,488	2,633	361,730

*Including $929,358 real estate. †Including $326,700 special deposits. §Including $240,507, payments in anticipation of "A" shares. ‡Including $295,346 Dominion securities and $283,240 Consols.

LOAN AND INVESTMENT COMPANIES.

TABLE No. V.—Statement of affairs showing capital stock, liabilities, etc.—*Continued.*

Schedule.	Sons of England Building, Loan and Savings Association, Toronto.*	Totals of 71 companies.	Totals of 64 companies reporting for the years —		Totals of 55 companies reporting for the years—		
			1889	1888	1889	1888	1887
	$	$	$	$	$	$	$
Capital Stock.							
Capital authorised	Unlimited	99,824,249	96,224,249	96,246,249	82,007,583	80,029,583	79,175,583
Capital subscribed	73,800	69,694,221	69,045,671	67,939,559	60,351,871	57,379,159	56,114,310
Liabilities.							
Liabilities to stockholders	1,451	41,629,987	41,485,965	40,108,161	38,591,870	36,895,451	35,910,563
Stock fully paid up	.....	12,149,509	12,128,759	11,617,271	12,128,759	11,617,271	11,342,861
Stock on which has been paid	1,451	18,569,883	18,465,808	18,470,826	16,268,813	15,729,576	15,429,167
Accumulating stock	.....	107,935	91,643	205,839	91,643	205,839	222,602
Reserve fund	.....	8,711,107	8,711,107	8,030,118	8,371,340	7,667,885	7,254,105
Dividends declared and unpaid	.....	985,602	984,944	955,644	930,260	901,150	885,736
Contingent fund and unappropriated profits	.....	1,105,951	1,103,704	828,463	801,055	773,730	776,092
Liabilities to the public	281	62,967,156	62,943,603	59,540,175	57,073,892	52,948,095	51,177,104
Deposits †	.....	16,942,965	16,942,965	16,560,766	16,823,175	16,519,063	17,533,413
Debentures payable in Canada	.....	7,622,256	7,622,256	6,578,122	7,089,355	5,949,676	5,500,622
Debentures payable elsewhere	.....	36,712,825	36,712,825	34,857,050	31,601,564	29,078,893	26,722,070
Interest on debent'rs and depo'ts due and accrued	.....	683,322	683,322	619,070	638,689	570,858	587,484
Owing to banks	.....	214,046	193,213	131,903	171,320	114,852	155,326
Other liabilities	281	791,742	789,022	793,264	749,789	714,753	678,189
Total liabilities	1,732	104,597,143	104,429,568	99,648,336	95,665,762	89,843,546	87,087,667
Assets.							
Secured loan assets	1,200	94,666,887	94,502,621	89,042,190	87,129,592	81,235,305	79,035,804
Real estate of—							
General borrowers	1,200	91,536,309	91,393,824	85,578,993	84,066,420	77,826,753	74,954,076
Directors and officers of company	.....	207,965	188,565	169,777	188,565	164,977	252,957
Shareholders' stock	.....	602,587	601,575	708,137	599,541	703,187	852,267
Directors and officers of company on their stock	.....	149,375	149,375	126,482	149,375	126,482	177,465
Otherwise secured	.....	2,179,651	2,169,282	2,458,801	2,125,691	2,413,906	2,799,039
Property assets	532	9,930,256	9,926,947	10,606,146	8,536,170	8,608,241	8,051,863
Municipal and school section securit's, cash value	.....	936,271	936,271	1,159,113	857,174	1,078,462	1,061,151
Office furniture and fixtures	.....	27,182	27,104	30,385	23,649	26,851	27,372
Cash on hand	46	101,376	101,228	63,768	96,110	59,738	74,053
Cash in banks	486	2,501,983	2,499,394	2,316,875	2,306,696	2,045,685	2,127,308
Office premises	.....	1,001,508	1,001,508	869,650	1,001,508	869,650	751,971
Real estate foreclosed	.....	1,095,197	1,095,197	1,574,041	1,042,520	1,092,929	1,091,961
Other property	.....	4,266,739	4,266,245	4,592,314	3,208,513	3,434,926	2,918,047
Total assets	1,732	104,597,143	104,429,568	99,648,336	95,665,762	89,843,546	87,087,667

* For six months. † Including in many instances the interest accrued.

LOAN AND INVESTMENT COMPANIES.

TABLE No. VI.—Miscellaneous statement of the affairs of 71 Loan and Investment Companies in the Province of Ontario for the year 1889, as required to be furnished by Chapter 169, Section 83, *et seq*, R. S. O., 1887, or by provisions of Special Charters.

Miscellaneous.	Barrie Loan and Savings Company, Barrie.	Hastings Loan and Investment Society, Belleville.	Royal Loan and Savings Company, Brantford.	Chatham Loan & Savings Company, Chatham.	Huron and Bruce Loan and Investment Company, Goderich.	Guelph and Ontario Investment and Savings Society, Guelph.	Hamilton Provident and Loan Society, Hamilton.
Dividends declared in year—							
Rate per cent	7	6.	7.	7.	6.	7½.	7.
Amount $	8,213	11,177	34,666	6,775	8,359	26 002	77,000
Loaned during year. $	22.913	26,140	203,467	94,627	29,854	287,584	624,245
Received from borrowers—							
Principal $	30,285	22,222	195,022	38,567	3,200	220,712	804,486
Interest $		21,161	75,502	16,053	9,280	68,499	
Received from depositors $	67,608	121,964	828,829	424,160	125,503	753,976	962,151
Repaid depositors $	70,134	116,684	820,665	396,058	135,755	779,028	1,076,312
Debentures issued	.....	48,667	111,712	300	.....	265,760	326,045
Debentures repaid $	.....	.....	101,909	.....	.....	246,091	193,555
Debentures to mature within one year $	.....	.....	107,592	300	.....	321,016	145,723
Average rate of interest—							
For debentures p.c.	.....	5.00	4.89	4.50	.....	4.48	4.33
For deposits p.c.	.....	4.00	3.50	4.02	4.00	3.00	2.96
Interest paid and accrued—							
On debentures $	.....	1,449	13,715	7	.....	24,841	64,505
On deposits $	1,630	3,917	14,259	8,034	3,094	9,455	26,553
Cost of management $	796	3,055	6,446	3,829	1,263	6,951	27,864
Invested and secured by mortgage—							
In Ontario $	174,074	320,567	1,235,993	309,742	220,459	1,280,613	3,231,903
Elsewhere $	.....	.....	.....	.....	.....	.....	123,308
Mortgages by instalments $	900	.....	24,855	55,891	.....	233,329	2,163,422
Mortgages at stated period $	173,174	320,567	1,210,138	253,851	220,459	1,047,284	1,191,789
Average rate of interest on total amount secured by mortgages p.c.	7.00	6.80	6.52	7.03	6.50	6.41	6.65
Average rate of interest on amount loaned on mortgages in year p.c.	7.00	6.50	6.29	6.70	6.50	6.10	6.40
Mortgages on which compulsory proceedings have been taken—							
Number	3	.....	18	3	.....	5	63
Amount $	5.021	.....	45,628	6,250	.....	22,854	128,100
Value of mortgaged property held for sale $	.....	20,000	29,677	11,900	.....	.....	65,545
Amount chargeable against such property $	.....	14,000	25,677	11,736	.....	.....	62,810

NOTE.—Cost of management includes commission, agency, taxes and all other expenses at the head office or elsewhere, not directly chargeable to or on account of borrowers.

LOAN AND INVESTMENT COMPANIES.

TABLE No. VI.—Miscellaneous statement of the affairs of Loan and Investment Companies, etc.—*Continued.*

Miscellaneous.	Hamilton Homestead Loan and Savings Society, Hamilton.	Landed Banking and Loan Company, Hamilton.	Frontenac Loan and Investment Society, Kingston.	Ontario Building and Savings Society, Kingston.	Agricultural Savings and Loan Company, London.	Canadian Savings and Loan Company, London.	Dominion Savings and Investment Society, London.
Dividends declared in year—							
Rate per cent	.....	6.	6.	6.	7.	7.	6.
Amount.....$	.....	34,812	12,000	15,000	43,406	48,221	55,921
Loaned during year .....$	10,718	371,083	70,080	64,173	301,479	242,038	276,468
Received from borrowers—							
Principal.....$	5,776	336,287	87,552	76,529	314,983	322,418	436,086
Interest .....$							
Received from depositors.....$	*25,084	1,424,520	352,892	361,326	624,915	1,023,848	750,771
Repaid depositors.....$	*28,841	1,349,220	361,177	353,118	592,176	1,020,300	786,972
Debentures issued .....$	.....	104,184	.....	.....	152,197	22,576	38,955
Debentures repaid.....$	.....	76,079	.....	.....	105,160	22,380	22,379
Debentures to mature within one year .....$	.....	93,200	.....	.....	195,953	42,570	82,490
Average rate of interest—							
For debentures.....p.c.	.....	4.99	.....	.....	4.88	4.90	4.75
For deposits.....p.c.	.....	4.14	3.17	3.17	4.20	4.20	4.50
Interest paid and accrued—							
On debentures.....$	.....	14,629	.....	.....	15,112	8,428	18,393
On deposits.....$	.....	23,408	7,261	5,055	23,396	26,448	23,120
Cost of management.....$	1,354	15,277	3,963	2,572	10,913	9,860	15,242
Invested and secured by mortgage—							
In Ontario.....$	†95,633	1,391,113	222,761	399,017	1,579,776	1,550,225	1,810,553
Elsewhere.....$	.....	198,191	104,276	.....	.....	.....	.....
Mortgages by instalments....$	.....	855,025	308,387	163,703	86,139	22,062	.....
Mortgages at stated period ..$	95,633	734,279	18,650	235,314	1,543,637	1,528,163	1,810,553
Average rate of interest on total am'nt secured by mortgage.p.c.	6.00	6.74	7.25	5.65	6.46	6.58	6.75
Average rate of interest on amount loaned on mortgages in year.....p.c.	.....	6.68	6.00	5.94	6.26	6.20	6.50
Mortgages on which compulsory proceed'gs have been taken—							
Number	.....	16	.....	12	9	12	36
Amount .....$	.....	37,196	.....	40,938	32,658	31,786	56,349
Value of mortgaged property held for sale .....$	.....	38,480	37,600	50,670	19,414	32,900	234,455
Amount chargeable against such property..$	.....	35,168	40,281	55,703	19,414	26,231	230,535

*Members only for dues and withdrawals. †In Hamilton. ‡Principal only.

LOAN AND INVESTMENT COMPANIES.

TABLE No. VI.—Miscellaneous statement of the affairs of Loan and Investment Companies, etc.—*Continued.*

Miscellaneous.	Empire Loan Company of Canada, London.	Huron and Erie Loan and Savings Company, London.	London Loan Company of Canada, London.	London Stock Company of Ontario, London.	Ontario Investment Association, London.	Ontario Loan and Debenture Company, London.	Royal Standard Loan Company, London.
Dividends declared in year—							
Rate per cent	6.	9.	7.			7.	6.
Amount $	6,075	101,904	44,121			84.000	10,647
Loaned during year $	69,694	937,176	290,526		6,099	588,325	52,106
Received from borrowers—							
Principal $	51,285	666,227	181,380		467,792	798,578	40,291
Interest $	14,764		78,949				22,492
Received from depositors $	267,117	1,134,875	882,960			575,326	298,060
Repaid depositors $	273,492	1,129,475	828,707		440	565,127	294,016
Debentures issued $		386,292	121,200		320,000	365,436	
Debentures repaid $		164,090	107,200		790,842	224,305	1,000
Debentures to mature within one year $		549,559	97,500		790,842	668,023	
Average rate of interest—							
For debentures p.c.		4.45	5.63			4.53	5.00
For deposits p.c.	4.50	4.00	4.68			4.15	4.33
Interest paid and accrued—							
On debentures $		57,705	11,779		52,617	73,617	854
On deposits $	5,090	45,358	21,114		102	19,092	6,673
Cost of management $	2,572	27,284	6,893		14,373	24,155	2,189
Invested and secured by mortgage—							
In Ontario $	†179,552	4,196,041	1,219,099		627,407	3,379,305	350,617
Elsewhere $					23,088		
Mortgages by instalments $	88,399	557,827	614,139			1,619,603	2,225
Mortgages at stated period $	91,153	3,638,214	604,960		650,495	1,759,702	348,380
Average rate of interest on total amount secured by mortgages p.c.	6.87	6.13	6.50			6.43	
Average rate of interest on amount loaned on mortgages in year p.c.	6.50	6.10	6.50			6.20	6.25
Mortgages on which compulsory proceed'gs have been taken—							
Number	3	10	9			13	
Amount $	5,438	45,261	24,149			55,393	
Value of mortgaged property held for sale $	2,600	3,012	7,500		64,730	3,522	
Amount chargeable against such property $	2,081	3,012	12,012		64,730	3,522	

*In Liquidation. †Principal only.

LOAN AND INVESTMENT COMPANIES.

TABLE No. VI. Miscellaneous statement of the affairs of Loan and Investment Companies, etc. *Continued.*

Miscellaneous.	Orangeville Building and Loan Association, Orangeville.	Ontario Loan and Savings Company, Oshawa.	Civil Service Building and Savings Society, Ottawa.	Dominion Investment Loan and Savings Company, Ottawa.	Metropolitan Loan and Savings Company, Ottawa.	Ottawa Building and Loan Society, Ottawa.	Owen Sound, Grey and Bruce Loan and Savings Company, Owen Sound
Dividends declared in year—							
Rate per cent	6.	7.	6.	....	6.	....	6.
Amount $	1,254	20,949	1,493	.....	18,635	.....	658
Loaned during year $	93	102,045	520	9,440	47,061	25,800	44,349
Received from borrowers—							
Principal $	1,487	96,256	24,425	14,628	53,604	5,716	126
Interest $	777	38,051		1,597	19,630		
Received from depositors $	.....	298,953	.....	.....	39,316	.....	.....
Repaid depositors $	.....	293,905	.....	.....	42,841	.....	.....
Debentures issued $	.....	7,800	.....	.....	.....	.....	.....
Debentures repaid $	.....	39,510	.....	.....	.....	.....	.....
Debentures to mature within one year $	.....	.....	.....	.....	.....	.....	.....
Average rate of interest—							
For debentures p.c.	.....	5.00	.....	.....	.....	.....	.....
For deposits p.c.	.....	4 00	.....	.....	4.00	.....	.....
Interest paid and accrued—							
On debentures $	.....	9,799	.....	.....	.....	.....	.....
On deposits $	.....	8,761	.....	.....	1,178	.....	.....
Cost of management $	114	5,755	514	614	2,414	537	259
Invested and secured by mortgage—							
In Ontario $	22,217	812,383	19,510	18,770	255,603	74,900	*44,349
Elsewhere $	.....	.....	324	.....	.....	.....	.....
Mortgages by instalments $	5,790	462,383	7,826	18,770	255,603	74,900	4,025
Mortgages at stated period $	16,427	350,000	12,008	.....	.....	.....	40,324
Average rate of interest on total amount secured by mortgages p.c.	7.00	6.25	7.00	7.00	6.50	7.00	6.50
Average rate of interest on amount loaned on mortgages in year p.c.	7.00	6.25	7.00	7.00	6.75	7.00	6.50
Mortgages on which compulsory proceedings have been taken—							
Number	.....	1	.....	3	.....	.....	.....
Amount $	.....	1,232	.....	2,015	.....	.....	.....
Value of mortgaged property held for sale $	.....	75,000	.....	.....	.....	.....	.....
Amount chargeable against such property $	.....	50,600	.....	.....	.....	.....	.....

*Principal only.

LOAN AND INVESTMENT COMPANIES.

TABLE No. VI.—Miscellaneous statement of the affairs of Loan and Investment Companies, etc.—*Continued.*

Miscellaneous.	Central Canada Loan and Savings Company, Peterborough.	Crown Savings and Loan Company, Petrolea.	Midland Loan and Savings Company, Port Hope.	Security Loan and Savings Company, St. Catharines.	Elgin Loan and Savings Company, St. Thomas.	Southern Loan and Savings Company, St. Thomas.	Southwestern Farmers' and Mechanics' Savings and Loan Society, St. Thomas.
Dividends declared in year—							
Rate per cent	6.	6.	7.	7.	6.	7.	7.
Amount $	17,739	6,801	21,000	19,191	10,092	28,000	9,397
Loaned during year $	1,684,371	51,606	202,514	134,761	123,682	101,977	56,219
Received from borrowers—							
Principal $	414,499	32,163	130,890	122,072	84,306	102,266	52,016
Interest $	180,399	9,818	48,065		19,532	37,443	
Received from depositors $	395,052	36,118	399,378	297,891	269,925	314,301	122,483
Repaid depositors $	388,004	25,998	439,107	285,755	261,845	339,473	127,816
Debentures issued $	1,105,442	.....	297,677	7,000	.....	.....	.....
Debentures repaid $	136,337	.....	188,508	8,341	.....	.....	.....
Debentures to mature within one year $	501,326	.....	239,573	400	.....	.....	.....
Average rate of interest—							
For debentures p.c.	4.84	.....	4.69	4.71	.....	.....	.....
For deposits p.c.	4.65	4.50	3.96	4.00	4.00	3.90	4.00
Interest paid and accrued—							
On debentures $	52,889	.....	16,818	1,338	.....	.....	.....
On deposits $	17,480	1,716	10,389	9,879	5,351	10,853	4,142
Cost of management $	16,577	1,197	6,972	4,446	2,359	4,225	2,268
Invested and secured by mortgage—							
In Ontario $	2,129,894	†157,517	992,804	596,593	315,323	707,188	251,972
Elsewhere $	6,000	.....	.....	.....	.....	.....	.....
Mortgages by instalments $	2,995	80,795	29,033	377,028	251,957	259,412	176,751
Mortgages at stated period $	2,132,899	76,722	963,771	219,565	63,366	447,776	75,221
Average rate of interest on total amount secured by mortgages p.c.	6.35	6.87	6.75	6.30	6.50	6.40	7.00
Average rate of interest on amount loaned on mortgages in year..p.c.	6.30	6.50	6.40	6.25	6.25	6.50	6.25
Mortgages on which compulsory proceedings have been taken—							
Number	16	3	7	11	3	14	5
Amount $	51,750	2,592	21,804	25,991	10,522	32,522	6,100
Value of mortgaged property held for sale $	.....	.....	19,200	37,700	.....	5,774	11,894
Amount chargeable against such property $	.....	.....	21,972	41,179	.....	5,774	11,000

*This Company purchased the assets of the Peterboro' Real Estate Investment Company during the year.
†Principal only.

LOAN AND INVESTMENT COMPANIES.

TABLE No. VI.—Miscellaneous statement of the affairs of Loan and Investment Companies, etc.—*Continued.*

Miscellaneous.	Star Loan Company, St. Thomas.	St. Thomas Loan Company, St. Thomas.	Huron and Lambton Loan and Savings Company, Sarnia.	Lambton Loan and Investment Company, Sarnia.	British Mortgage Loan Company, Stratford.	Arcanum Loan and Savings Association, Toronto.*	Bristol and West of England Canadian Land Mortgage and Investment Co., Toronto.
Dividends declared in year—							
Rate per cent	6.	6.	7.	8.	7.	.....	8.
Amount $	9,864	3,673	22,770	35,550	20,700	.....	10,639
Loaned during year $	46,299	107,855	156,072	213,918	223,988	.....	234,073
Received from borrowers—							
Principal ... $	48,318	14,594	112,288	259,221	143,350	.....	206,678
Interest $	17,310	4,303	40,013			131	83,906
Received from depositors $	109,648	182,837	447,146	598,476	567,309	†5,330	.....
Repaid depositors $	118,910	115,845	386,177	618,358	478,836	†563	.....
Debentures issued $	.....	.....	.....	77,037	.....	.....	106,365
Debentures repaid $	.....	.....	.....	61,620	.....	.....	98,063
Debentures to mature within one year $	.....	.....	.....	76,074	.....	.....	257,611
Average rate of interest—							
For debentures p.c.	.....	.....	.....	4.50	.....	.....	4.37
For deposits p.c.	4.28	4.47	4.66	3.75	4.00	.....	.....
Interest paid and accrued—							
On debentures $	.....	.....	.....	8,246	.....	.....	47,294
On deposits $	4,589	1,623	13,287	16,545	15,967	.....	.....
Cost of management $	2,065	857	4,643	5,072	4,541	176	18,613
Invested and secured by mortgage—							
In Ontario $	273,464	153,303	588,639	1,174,299	818,922	5,200	‡1,170,719
Elsewhere $	.....	.....	.....	.....	.....	.....	.....
Mortgages by instalments $	.....	144,918	.....	.....	.....	.....	15,814
Mortgages at stated period $	273,464	8,385	588,639	1,174,299	818,922	5,200	1,154,905
Average rate of interest on total amount secured by mortgages p.c.	6.50	6.72	6.85	6.50	6.37	6.00	6.90
Average rate of interest on amount loaned on mortgages in year p.c.	6.25	6.42	6.25	6.50	6.25	6.00	6.75
Mortgages on which compulsory proceedings have been taken—							
Number	.....	.....	.....	.....	12	.....	10
Amount $	.....	.....	.....	.....	17,050	.....	17,600
Value of mortgaged property held for sale $	.....	.....	.....	.....	15,700	.....	38,000
Amount chargeable against such property $	.....	.....	.....	.....	15,700	.....	31,071

* For 11 months. † Members only for dues and withdrawals. ‡Principal only.

LOAN AND INVESTMENT COMPANIES.

TABLE No. VI.—Miscellaneous statement of the affairs of Loan and Investment Companies, etc.—*Continued.*

Miscellaneous.	British Canadian Loan and Investment Company, Toronto.	Building and Loan Association, Toronto.	Canadian Homestead Loan and Savings Association, Toronto.	Canada Landed Credit Company, Toronto.	Canada Permanent Loan and Savings Company, Toronto.	City and County Loan Association, Toronto.	Dovercourt Land, Building and Savings Company, Toronto.
Dividends declared in year—							
Rate per cent	7.	6.	....	7.	12.	4.	10.
Amount $	22,580	45,000	.....	46,480	300,000	105	6,364
Loaned during year $	274,264	331,079	29,250	252,550	2,276,984	6,633	.....
Received from borrowers—							
Principal $	137,766	354,126	.....	215,503	2,310,989	805	.....
Interest $	98,633		3,292	155,408			
Received from depositors $	.....	892,668	†26,683	.....	513,541	.....	.....
Repaid depositors $	260	898,023	†13,871	.....	459,913	.....	.....
Debentures issued $	219,123	268,175	.....	367,506	*1,068,282	.....	9,500
Debentures repaid $	85,517	211,843	.....	306,580	507,836	.....	2,500
Debentures to mature within one year $	218,730	60,510	....	304,013	769,862	.....	.....
Average rate of interest—							
For debentures p.c.	4.83	4.62	.....	4.43	4.24	.....	5.00
For deposits p.c.	4.43	3.26	.....	.....	3.90	....	.....
Interest paid and accrued—							
On debentures $	59,117	27,158	.....	66,636	242,066	.....	.....
On deposits $	446	7,693	.....	.....	45,381	.....	.....
Cost of management $	14,239	15,575	1,414	22,175	87,729	100	2,439
Invested and secured by mortgage—							
In Ontario $	1,378,686	§1,284,325	60,750	1,778,516	9,420,570	6,007	106,170
Elsewhere $	249,319	143,086	.....	420,804	1,373,661	....	.....
Mortgages by instalments $	‡699,643	72,146	60,750	536,804	9,095,555	2,361	106,170
Mortgages at stated period $	‡928,362	1,355,265	.....	1,662,516	1,698,676	3,646	.....
Average rate of interest on total amount secured by mortgages p.c.	6.58	6.73	6.00	7.00	6.80	6.90	.....
Average rate of interest on amount loaned on mortgages in year p.c.	6.81	6.75	6.00	6.66	6.80	6.90	.....
Mortgages on which compulsory proceedings have been taken—							
Number	8	10	....	42	137	.....	.....
Amount $	15,405	152,686	....	53,128	272,314	.....	.....
Value of mortgaged property held for sale $	105,000	.....	.....	101,680	523,875	.....	.....
Amount chargeable against such property $	101,478	... ...	...	126,906	419,558	.....	.....

*Including debenture stock bearing interest at four per cent. †Members only for dues and with drawals.
‡Principal only. §Including amount loaned on shareholders' stock secured by mortgage deeds.

LOAN AND INVESTMENT COMPANIES.

TABLE No. VI.—Miscellaneous statement of the affairs of Loan and Investment Companies, etc.,—*Continued.*

Miscellaneous.	Farmers' Loan and Savings Company, Toronto.	Freehold Loan and Savings Company, Toronto.	Home Savings and Loan Company, Toronto.	Imperial Loan and Investment Company of Canada, Toronto.	Land Security Company, Toronto.	London and Canadian Loan and Agency Company, Toronto.	London and Ontario Investment Company, Toronto.
Dividends declared in year—							
Rate per cent	7.	10.	7.	7.	10.	9.	7.
Amount	42,800	124,241	10,500	43,887	46,721	63,000	34,716
Loaned during year.....$	391,567	1,459,559	1,586,866	453,068	619,854	608,605	360,305
Received from borrowers—							
Principal	263,765	1,343,874	1,354,934	272,355	377,629	580,300	565,257
Interest	86,405		74,382	160,735	62,137	286,813	
Received from depositors ....$	451,218	664,650	4,142,252	310,077	371,057	.....	.....
Repaid depositors.....$	512,984	701,871	3,902,196	361,489	381,648	.....	.....
Debentures issued .....$	167,295	690,928	.....	157,227	347,335	†1,114,355	422,099
Debentures repaid.....$	500	386,907	.....	56,493	208,250	†1,034,385	403,527
Debentures to mature within one year.....$	8,267	380,410	.....	74,363	263,700	†673,177	642,562
Average rate of interest—							
For debentures.....p.c.	5.33	4.57	.....	4 70	5.30	4.40	4.67
For deposits .....p.c.	4.25	4.00	4.00	4.50	4.75	.....	.....
Interest paid and accrued—							
On debentures .....$	22,067	133,759	.....	63,454	22,478	157,749	103,280
On deposits.....$	19,109	31,829	60,813	5,378	17,428	.....	.....
Cost of management. .....$	9,772	47,731	15,596	16,267	18,937	43,512	31,624
Invested and secured by mortgage—							
In Ontario.....$	1,715,280	4,382,952	798,398	1,794,171	1,095,443	3,758,802	2,757,070
Elsewhere .....$	12,000	1,059,558	.....	25,226	.....		.....
Mortgages by instalments....$	39,426	796,811	207,287	385,935	810,868	.....	.....
Mortgages at stated period ..$	1,687,854	4,645,699	591,111	1,433,462	284,575	3,758,802	2,757,070
Average rate of interest on total amount secured by mortgages .....p.c.	6.87	6.75	6.00	6.77	*	6.50	6.63
Average rate of interest on amount loaned on mortgages in year.... .....p.c.	6.50	‡6.50	6.00	6.50	7.00	6.50	6.63
Mortgages on which compulsory proceedings have been taken—							
Number	12	52	1	8	3	20	26
Amount.....$	24,266	173,119	2,144	21,700	3,055	25,266	63,849
Value of mortgaged property held for sale.....$	63,850	418,053	2,300	4,000	4,110	225,534	127,012
Amount chargeable against such property .....$	50,507	396,942	2,144	4,000	2,720	225,534	124,811

* 6 per cent. on land sales and 8 per cent. on loans. † Including certificates payable at fixed dates.
‡For Ontario, 8 per cent. in Manitoba.

LOAN AND INVESTMENT COMPANIES.

TABLE No. VI.—Miscellaneous statement of the affairs of Loan and Investment Companies, etc.—*Continued*

Miscellaneous.	National Investment Company of Canada, Toronto.	North British Canadian Investment Company, Toronto.	North of Scotland Canadian Mortgage Company, Toronto.	Ontario Industrial Loan and Investment Company, Toronto.	Peoples' Loan and Deposit Company, Toronto.	Real Estate Loan Company of Canada, Toronto.	Royal Oak Building and Savings Society, Toronto.
Dividends declared in year—							
Rate per cent	6.	5.	10.	7.	7.		
Amount $	25,500	24,333	66,917	21,892	41,745		
Loaned during year $	316,076	518,968	841,811	174,431	297,205	72,894	3,10
Received from borrowers—							
Principal $	245,304	510,544	594,368	57,692	312,866	40,811	
Interest $	100,725		227,552	21,573		9,857	452
Received from depositors $		24,333		101,113	892,677		†4,905
Repaid depositors $		22,387		111,232	921,901		†1,891
Debentures issued $	163,999	145,513	604,474		56,700		
Debentures repaid $	149,323	172,377	495,947		6,700		
Debentures to mature within one year $	175,160	272,051	705,545		11,100		
Average rate of interest—							
For debentures p.c.	4.61	*4.00-5.00	4.13		5.34		
For deposits p.c.				5.00	4.38		
Interest paid and accrued—							
On debentures $	51,470	92,467	104,906		5,769		
On deposits $				8,593	21,086		
Cost of management $	13,490	19,729	46,135	6,729	7,730	3,882	336
Invested and secured by mortgage—							
In Ontario $	1,165,164	1,539,867	3,408,729	295,827	1,320,136	66,617	8,200
Elsewhere $	377,928	672,790				98,797	
Mortgages by instalments $	53,808	2,772			33,323		
Mortgages at stated period $	1,489,284	2,209,885	3,408,729	295,827	1,286,813	165,414	8,200
Average rate of interest on total amount secured by mortgages p.c.	6.83	6.75	6.78	6.25	7.00	6.00	6.00
Average rate of interest on amount loaned on mortgages in year p.c.	6.52	6.75	6.38	6.25	7.00	6.00	6.00
Mortgages on which compulsory proceedings have been taken—							
Number	1	11	23		12		
Amount $	2,400	17,563	40,539		46,804		
Value of mortgaged property held for sale $		106,905			20,800	25,079	
Amount chargeable against such property $		126,619			17,394	25,079	

* Debenture stock bears 5 per cent. † Members only for dues and withdrawals.

LOAN AND INVESTMENT COMPANIES.

TABLE No. VI.—Miscellaneous statement of the affairs of Loan and Investment Companies, etc.—*Continued.*

Miscellaneous.	Scottish Ontario and Manitoba Land Company, Toronto.	Toronto Land and Loan Company, Toronto.	Trust and Loan Company of Canada, Toronto.	Union Loan and Savings Company, Toronto.	Western Canada Loan and Savings Company, Toronto.	Workingmen's Savings and Loan Association, Toronto.	Oxford Permanent Loan and Savings Society, Woodstock.
Dividends declared in year—							
Rate per cent	1½	7	6	8	10	.....	6½
Amount $	9,125	4,631	94,900	52,999	141,885	.....	15,198
Loaned during year $	.....	64,695	776,601	672,855	1,224,811	.....	45,278
Received from borrowers—							
Principal $	.....	14,773	547,004	540,781	1,231,551	55	50,505
Interest $	.....	4,906	311,190				
Received from depositors $	97	833	.....	514,051	635,320	‡2,880	95,944
Repaid depositors $	462	491	.....	515,135	778,003	‡306	98,357
Debentures issued $	45,333	.....	677,033	321,770	626,668	.....	.....
Debentures repaid $	48,423	1,550	434,415	117,361	360,852	.....	.....
Debentures to mature within one year $	17,520	.....	962,468	42,922	478,831	.....	.....
Average rate of interest—							
For debentures p. c.		.....	4.15	4.50	4.25	.....	.....
For deposits p. c.	.....	5.00	.....	4.00	3.88	.....	4.50
Interest paid and accrued—							
On debentures $	18,737	163	191,747	28,243	129,783	.....	.....
On deposits $	.....	95	.....	16,108	47,673	.....	4,119
Cost of management $	6,711	2,027	61,662	15,698	58,973	94	2,015
Invested and secured by mortgage—							
In Ontario $	128,250	107,813	2,558,594	1,911,857	5,149,266	2,400	342,042
Elsewhere $	127,615	.....	2,515,203	.....	1,341,926	.....	.....
Mortgages by instalments $	.....	.....	.....	911,857	6,491,192	.....	11,689
Mortgages at stated period $	255,865	107,813	5,073,797	1,000,000	.....	2,400	330,353
Average rate of interest on total amount secured by mortgages p. c.	†	7.00	6.51	7.00	6.86	6.00	7.75
Average rate of interest on amount loaned on mortgages in year p.c.	6.00	7.00	6.36	6.75	6.72	6.00	6.50
Mortgages on which compulsory proceedings have been taken—							
Number $	.....	1	28	11	62	.....	2
Amount $	.....	1,713	45,580	39,200	120,817	.....	2,900
Value of mortgaged property held for sale $	75,890	.....	51,124	80,071	254,623	.....	11,440
Amount chargeable against such property $	60,852	.....	56,737	80,071	243,394	.....	11,440

*From 4½ to 5 p. c. †From 6 to 7 p. c. ‡Members only for dues and withdrawals.

LOAN AND INVESTMENT COMPANIES.

TABLE No. VI.—Miscellaneous statement of the affairs of Loan and Investment Companies, etc.- *Continued.*

Miscellaneous.		Sons of England Building, Loan and Savings Association, Toronto.	Totals of 71 companies	Totals for the 64 companies reporting for the years—		Totals for the 55 companies reporting for the years—		
				1889.	1888.	1889.	1888.	1887.
Dividends declared in year—								
Rate per cent								
Amount	$		2,202,217	2,201,454	2,152,377	2,098,814	2,035,446	2,021,207
Loaned during year	$	1,200	21,795,945	21,705,423	18,567,954	20,391,868	17,049,796	17,162,412
Received from borrowers—								
Principal	$		21,353,871	21,330,361	20,393,404	19,965,687	18,839,040	18,987,927
Interest	$							
Received from depositors.	$		24,734,347	24,721,232	23,001,584	24,419,674	22,918,698	25,283,071
Repaid depositors	$		24,583,550	24,580,790	24,261,630	24,357,831	24,188,350	25,283,441
Debentures issued	$		11,337,938	11,337,938	8,736,777	10,505,870	7,958,544	6,263,884
Debentures repaid	$		7,578,661	7,578,661	5,944,268	6,868,817	5,123,871	4,346,294
Debentures to mature within one year	$		10,230,949	10,230,949	10,527,983	9,080,086	9,033,705	5,777,979
Average rate of interest—								
For debentures p.c.			4.545	4.545	4.601	4.501	4.546	4.818
For deposits p.c.			4.017	4.017	4.049	4.023	4.290	3.908
Interest paid and accrued—								
On debentures	$		2,015,084	2,015,084	1,906,741	1,741,483	1,592,484	1,552,621
On deposits	$		680,570	680,570	710,636	676,871	708,708	685,138
Cost of management	$		843,390	841,274	838,906	765,904	749,158	685,905
Invested and secured by mortgage—								
In Ontario	$	1,200	91,574,215	91,413,189	86,728,523	84,171,465	78,776,916	75,494,963
Elsewhere	$							
Mortgages by instalments.	$	1,200	29,233,503	29,132,247	32,337,689	28,223,264	31,406,575	30,001,162
Mortgages at stated period.	$		62,340,712	62,280,942	54,390,834	55,948,201	47,370,341	45,493,801
Average rate of interest on total amount secured by mortgages p.c.								
Average rate of interest on amount loaned on mortgages in year p.c.		4.00						
Mortgages on which compulsory proceedings have been taken—								
Number			767	764	820	716	736	688
Amount	$		1,850,647	1,848,632	1,834,890	1,746,794	1,673,103	1,419,012
Value of mortgaged property held for sale	$		3,026,619	3,026,619	3,196,160	2,611,812	2,719,277	2,491,788
Amount chargeable against such property	$		2,860,394	2,860,394	2,969,480	2,446,634	2,493,399	2,190,465

PAPERS

And Documents relating to the Ontario and Rainy River Railway Company and the Ottawa and Parry Sound Railway Company.

Presented to the Legislative Assembly.

By command of His Honour the Lieutenant-Governor.

J. M. GIBSON,
Provincial Secretary.

BOARD OF TRADE,

OFFICE OF THE SECRETARY,
PORT ARTHUR, CANADA,

February 28th, 1890.

Hon. Mr. OLIVER MOWAT,
Attorney-General, Toronto.

SIR,—By direction of the Board of Trade we beg to enclose you the following Petition passed by it on this date.

We have the honor to be,
Your obedient servants,

GEO. A. GRAHAM,
President.

J. G. O'CONNOR,
Secretary.

PETITION.

Whereas the Legislature of the Province of Ontario at its last Session did grant certain aid by way of a subsidy of $3,000 per mile for fifty miles of the Ontario and Rainy River Railway, with permission to apply said subsidy to the construction of the Port Arthur, Duluth & Western Railway in return for running powers, and

Whereas the granting of said subsidy made it possible to proceed with the construction of The Port Arthur, Duluth & Western Railway, and work has already been done on said railway to equal twenty miles of completed track, and

Whereas the further extension of said railway beyond the fifty miles so subsidized will not be possible without additional Provincial aid, such as has heretofore been granted, and

Whereas there exists in the district south-west and west of Port Arthur large tracts of good agricultural lands, forests of the finest pine, tamrac, spruce, cedar and poplar timber and mineral lands already proven to be rich in gold silver, copper and iron, almost the whole of which agricultural and mineral lands and pine and other timber are the property of the Province of Ontario, and

Whereas without railway communication the fertile lands cannot be opened for settlement or colonization,—the gold, silver, iron and copper mines cannot be developed nor can the merchantable timber of the forest be brought to market;

Therefore be it resolved that in the opinion of this Board it is advisable, and that this Board respectfully recommends to the Government of the Province of Ontario the granting of an additional subsidy of at least $3,000 per mile for another one hundred miles of the said Ontario & Rainy River Railway, with permission to apply it in a similar manner to the subsidy already voted.

To the Honourable

THE ATTORNEY-GENERAL
of the Province of Ontario.

The memorial of the Ottawa, Arnprior and Renfrew and the Ottawa and Parry Sound Railways most respectfully sheweth :—

1. That your memorialists are duly incorporated. The first under an Act of the Province of Ontario, and the second under an Act of the Dominion of Canada.

2. The said two railway companies have power to amalgamate.

3. It is proposed to run from the city of Ottawa, thence to the village of Arnprior, through the townships of Nepean, March, Huntley, Torbolton and Fitzroy, thence through the townships of Macnab and Horton to the village of Renfrew, at which point the Ottawa and Parry Sound road commences, and runs by way of the villages of Douglas and Eganville through the townships of Horton, Admaston, Bromley and Grattan, thence through the townships of Algona, Hagarty, Sherwood, Jones, Lyell, Sabine, Clyde, Nightingale, Lawrence, Livingstone, Peck, Finlayson, Sinclair, Chaffee (where it crosses the Northern and Pacific Junction road), Stisted, Cardwell, Monteith, Christie, Foley, McDougall to Parry Sound.

4. The proposed railway will open up some of the richest farming and mineral lands along the fertile valleys of the Ottawa and Bonnechere rivers.

5. Between the village of Eganville and Parry Sound the proposed railway will open up the newly-surveyed townships which have not yet been taken up by settlers, the said townships being timbered with a class of timber such as hardwood and cedar, that cannot find a market without railway facilities.

6. We believe that the Province would be more than recouped for any subsidy given by the revenue derived from dues on such timber.

7. The proposed railway will open up sections of country now very remote from railway communication, and which cannot be developed without railways.

8. It is intended that the proposed railway will run in the vicinity of the Chats Rapids on the Ottawa river, and will materially assist in developing the unrivalled water power which has hitherto remained unoccupied solely for want of proper railway facilities, as well as the rich lead mines which are situate in the same vicinity.

9. The country through which the proposed road will run is rich in minerals such as iron, phosphates, etc., which it is impossible to develop without railways.

10. The building of the said railway will save the Province a very large amount of money in the building of colonization roads.

11. The proposed railway will, when completed, be the most direct line from Chicago to the eastern seaports, being 545 miles from Parry Sound to Portland, about three-quarters of the distance being through our own territory, being about 160 miles shorter than any other existing route between Chicago and the Atlantic seaports, and will without doubt control a very large share of the carrying trades of the western States to the Atlantic which now find their market through Buffalo and Ogdensburgh routes.

12. The entire length of the said road from Ottawa to Parry Sound will be 230 miles.

13. That to enable your petitioners to efficiently carry out said railway construction, some co-operation from the Government of this Province is needed in order to strengthen their position with the capitalists of the country.

14. That your petitioners are well assured that with a grant of five thousand dollars per mile for 230 miles they could forthwith commence and rapidly complete the said proposed railway.

Your petitioners would therefore pray :—

That the Honourable the Minister of Public Works would be pleased to recommend the granting of said, and that your Government will be pleased to grant the same.

And your petitioners will ever pray.

E. H. Bronson, M.P.P., Ottawa.
J. R. Booth, Ottawa.
Henry Mackay, Ottawa.
Charles Mohr, Fitzroy.
G. W. Monk, M.P.P., Fitzroy.
R. G. Moles, Reeve, Arnprior.
J. G. Crinston, M.D., Arnprior.
A. G. Campbell, Arnprior.
M. Galvin, Arnprior.
Claude McLachins, Arnprior.
J. D. McAndrew, M.P.P., Renfrew.
Jas. Craig, Renfrew.
Thos. Henderson, Reeve, Renfrew.
A. A. Wright, Renfrew.
Chas. Ross, Reeve, Bromley.
John Bonfield, Reeve, Eganville.
Thos. Mahar, Reeve, Sebastopol.
Stephen Ryan, Reeve, South Algona.
Thos. Murray, M.PP., North Renfrew.
S. Armstrong, M.P.P., Parry Sound.
Edward Arsmtrong, Parry Sound.

The Honourable.
The Commissioner of Crown Lands,
Toronto.

Sir,—The Petition of the municipal council of the united townships of Brudenell and Lyndoch, in the County of Renfrew would respectfully represent

That this municipality suffers great loss, and inconvenience from the want of railroad facilities, and from the want of markets caused thereby, and which renders farming very unremunerative, and prevents the settlement of the country.

That the building of a railroad from the village of Renfrew on the Canada Pacific to Eganville, a distance of about twenty-four miles would bring it within a reasonable distance of all the south western part of the County of Renfew, and would open a market for all the farming community in that section. It would be a very great benefit to all lumbermen on the Bonnechere and Madawaska Rivers, and would also be the means of opening up the numerous phosphate mines in this section, and would lead to the unoccupied lands being settled upon.

Your petitioners believe that if a grant of say three thousand two hundred dollars per mile was granted by the Ontario Government, that this road would at once be built, and your petitioners would therefore respectfully urge upon you to obtain from the Ontario Government a grant of that amount per mile to assist in the building of this road.

By order of the municipal council of the united townships of Brundenell and Lyndoch.

James Costello, Reeve.
Timothy C. Hutty, Councillor.
John Herrne, Councillor.
John Whelan, Clerk.
Martin Kennealy, Councillor.
William Kitt, Councillor,
and others.

Dated at Brundenell, this 5th day of February, 1890.

To the Honourable
THE COMMISSIONER OF CROWN LANDS,
Toronto.

SIR,—The petition of the Municipal Council of the Township of South Algona, in the County of Renfrew, would respectfully represent: That this municipality suffers great loss and inconvenience from the want of railway facilities and from the want of markets caused thereby, and which renders farming very unremunerative and prevents the settlement of the country. That the building of a railroad from the Village of Renfrew on the Canada Pacific to Eganville, a distance of about twenty-four miles, would bring it within a reasonable distance of all the south-western part of the County of Renfrew, and would open a market for all the farming community in that section; it would be of very great benefit to all lumbermen on the Bonnechere and Madawaska Rivers, and would also be the means of opening up the numerous phosphate mines of this section, and would lead to the unoccupied lands being settled upon. Your petitioners believe that if a grant of say three thousand two hundred dollars per mile was granted by the Ontario Government that this road would be built at once, and your petitioners would therefore respectfully urge upon you to obtain from the Ontario Government a grant of that amount per mile to assist in the building of this road. By order of the Municipal Council of the municipality of South Algona.

Dated at Algona, January 25th, A.D. 1890.

STEPHEN RYAN,
Reeve.
EDMUND BENNETT,
Clerk.

TO THE HONOURABLE THE COMMISSIONER OF CROWN LANDS,
Toronto.

SIR,—The Petition of the Municipal Council of the Township of Bromley, in the County of Renfrew, would respectfully represent, That this municipality suffers great loss and inconvenience from the want of Railway facilities, and from the want of markets caused thereby, and which renders farming very unremunerative, and prevents the settlement of the country. That the building of a railroad from the Village of Renfrew on the Canada Pacific to Eganville, a distance of about twenty-four miles, would bring it within a reasonable distance of all the south-western part of the County of Renfrew, and would open a market for all the farming community in that section. It would be of great benefit to all lumbermen on the Bonnechere and Madawaska rivers, and would also be the means of opening up the numerous phosphate mines of this section, and would lead to the unoccupied lands being settled upon.

Your petitioners believe that if a grant of say three thousand two hundred dollars per mile was granted by the Ontario Government, that this road would be built at once, and your petitioners would therefore respectfully urge upon you to obtain from the Ontario Government a grant of that amount per mile to assist in the building of this road.

By order of the Municipal Council of the municipality of Bromley.

JOHN BREEN,
Reeve.

[SEAL.]

PATRICK HART,
Clerk.

Dated at Bromley, January 25th, A.D. 1890.

To the Lieutenant-Governor in Council.

The undersigned are appointed by the people of Admaston to humbly represent, That whereas a subsidy of $3,200 per mile has been granted by the Dominion Government to aid in the construction of a railway from Renfrew to Egansville, and that the people of said municipality are exceedingly anxious of securing the building of the said road for the purpose of facilitating traffic and intercourse, as well between themselves as with the outer world, and to assist in developing timber and mineral resources yet untouched, which are well known to exist; and whereas belief is confirmed in that the granting of like amount by our Ontario Government would ensure the prosecution and completion of the said railway at an early date; Therefore, as instructed by the people of Admaston, we humbly petition the Lieutenant-Governor in Council to grant a subsidy of three thousand two hundred dollars ($3,200) per mile, for the purpose of securing the construction of the said railway from Renfrew to Eganville; and your petitioners as in duty bound will ever pray.

Stephen Whilan,
Reeve.
John Connolly,
Clerk.

Admaston, February 7th, 1890.

Toronto, 31st March, 1890.

Sir,—On behalf of the Ottawa and Parry Sound Railway I beg to present for your consideration the following facts with reference to this projected line, which will commence at Ottawa, running to Parry Sound on the Georgian Bay *via* Arnprior, Renfrew, Eganville, passing close to the Palmer Rapids, and crossing the Northern and Pacific Junction Railway, about as near Burk's Falls, connecting them with the Parry Sound Colonization Railway Company's line to Parry Sound.

After many attempts we find it is impossible to obtain any company or capitalists to undertake the building of a railway through the country referred to, without some assistance of a substantial character from your Government. It is usual to receive aid from municipalities, but as this is *prima facie* a colonization road, assistance from this source cannot be expected.

This line, when constructed, will act as a powerful colonizer, there not being at present any railway facilities whatever, and there are in the country through which it will pass, rich deposits of iron ore, phosphate, and other minerals, which could be worked to great advantage if there were any means of getting access to them by railway communication or getting them to a market over a railway.

There are also large tracts of good agricultural land on this district unsettled, and which will not be settled until the country can be opened up and made accessible by a railway, but the greatest advantage, we consider, would be the marketing of the various qualities of hardwood, which at present have no value as they can only be transported by rail, we are confident the revenue from this source alone to your Government (woods which would otherwise be lost to both settlers and Government) would more than equal that already derived from pine over the same area.

I am authorized to state that if you will be pleased to grant a subsidy of $5,000 per mile for that portion of the line from Renfrew to the crossing of the Northern Pacific Junction Railway, a distance of about 150 miles, and $3,000 per mile for that portion of the line from Renfrew to Arnprior, a distance of about 22 miles, that the work would be put under contract at once, and the whole line completed within a reasonable time.

It will be unnecessary for me to take up your time in presenting the facts and arguments laid before you last year, further than to say the settlement of the country and its consequent development is being held back awaiting railway facilities which our line would give when built.

I might add that nearly 100 miles of the line would be in the direction of the projected lines to the "Soo," and could be utilized by them to that extent. Upon examination of the map of the province you will find our line will run midway between the northerly termini of the different roads running from the St. Lawrence (who are seeking extension "Soo"-ward) and the C. P. Ry. on the northerly limit of the Province.

We would therefore respectfully ask that your Government be pleased to grant at its present session the subsidy hereinbefore set forth, it being a most favorable time now for railway construction; labor is plentiful at reasonable rates, and money comparatively cheap, thus greatly facilitating the financing necessary to carry on the undertaking, and ensuring its early completion, which would result, we are confident, in a still greater benefit to the province at large, both directly and indirectly.

I beg to remain,

Sir,

Your obedient servant,

J. R. Booth.

The Hon. O. Mowat,

Premier and Attorney-General, Toronto.

We the undersigned members of the Legislative Assembly, representing counties lying easterly of, contiguous to, or along the line, and likely to be benefitted by the projected Ottawa and Parry Sound Railway, hereby heartily approve of above application for subsidy, and respectfully urge that it be granted, as we are fully alive to its very great importance as it will be a powerful colonization road through a country which has no means at present of developing its vast natural resources.

R. H. Preston,
Alfred Evanturel,
G. W. Monk,
W. P. Hudson,
James Rayside,
Samuel Armstrong,
E. H. Bronson,
W. C. Caldwell,
Wm. Mack,
J. P. Whitney,
Thomas Murray,
A. F. Wood,
F. J. French.

RETURN.

Documents and Papers relating to the Upper Canada Improvement Fund.

Presented to the Legislative Assembly,

By Command,

J. M. GIBSON,

Secretary.

Provincial Secretary's Office,
Toronto, 2nd April, 1890.

DOCUMENTS AND PAPERS RELATING TO THE UPPER CANADA IMPROVEMENT FUND.

16 VIC., CAP. 159.

An Act to amend the Law for the Sale and the Settlement of Public Lands.

[*14th June 1853.*]

XIV. It shall be lawful for the Governor in Council to reserve out of the proceeds of the School Lands in any county, a sum not exceeding one-fourth of such proceeds, as a fund for public improvements within the county, to be expended under the direction of the Governor in Council, and also to reserve out of the proceeds of unappropriated Crown Lands in any county, a sum not exceeding one-fifth, as a fund for public improvements within the County; to be also expended under the direction of the Governor in council.

[Re-enacted C. S. C., c. 26, s. 7.]

Provided always, that the particulars of all such sums, and the expenditure thereof, shall be laid before Parliament within the first ten days of each Session.

Provided always, that not exceeding six per cent. on the amount collected, including surveys, shall be charged for the sale and management of Lands forming the Common School Fund, arising out of one million of acres of land set apart in the Huron Tract.

[Re-enacted C. S. C., c. 26, s. 7, 2.]

NOTE.—*Schedule A of Consolidated Statutes of Canada at page 1205, purported to Repeal the whole of Cap. 159 of 16 Victoria. But section 14, above set forth, was carried into Consolidated Statutes of Canada, Cap. 26, "An Act respecting the Public School Lands and Fund for Education," as section 7, see infra, and therefore was practically re-enacted and not repealed.*

THE CONSOLIDATED STATUTES OF CANADA.

CHAPTER 26.

An Act respecting the Public School Lands and Funds for Education.

Her Majesty, by and with the advice and consent of the Legislative Council and Assembly of Canada, enacts as follows:

1. The Commissioner of Crown Lands, having under the provisions of an Act 12 Vic. 200, and under the direction of the Governor in Council, set apart

and appropriated one million of acres of Public Lands for Common School purposes, and portions thereof, having been disposed of under the said authority, the remainder shall be disposed of by the Commissioner, on such terms and conditions as may by the Governor in Council be approved, and the money arising from the sale or disposal of any portion of the said lands shall remain or be invested and applied towards creating a capital sum, sufficient at the rate of six per cent. per annum interest to produce a clear sum of four hundred thousand dollars per annum, and such capital and the income therefrom shall form the Common School Fund. But before any appropriation of the money arising from the sale of such Lands shall be made, all charges thereon for the management or sale thereof, and all Indian annuities charged upon such lands or moneys shall be first paid. 12 V. c. 200, s 3.

2. All moneys arising after the 27th day of May, 1850, from the sale of any public lands of the Province, shall remain or be set apart as part of the capital of the said Common School Fund, until the same is sufficient at the rate aforesaid to produce the said sum of four hundred thousand dollars per annum. 12 V. c. 200, s. 1.

3. For the purpose of creating such annual income, the capital of the said Fund shall from time to time remain or be invested in the Public School Debentures of this Province, or in the debentures of any public company or companies in the Province, incorporated by Act of the Legislature for the construction of works of a public nature, and which having subscribed their whole capital stock, have paid up one-half of such stock and completed one-half of such work or works;

(2) And the said Fund and the Income thereof, shall not be alienated for any purpose whatever, but shall remain a perpetual Fund for the support of Common Schools, and the establishment of Township and Parish Libraries. 12 V. c. 200, s. 2.

4. For the establishment, support and maintenance of Common Schools in this Province, until the said Common School Fund produces a net yearly income of two hundred thousand dollars or upwards, there shall be granted to Her Majesty, yearly, the sum of two hundred thousand dollars, and such sum shall be composed and made up of the annual income and revenue derived from the permanent fund hereinbefore mentioned, and of such further sum as may be required to complete the same, out of any unappropriated moneys raised and levied by the authority of the Legislature, for the public uses of this Province; and the said annual grant shall constitute the Common School Fund. 4, 5 V. c. 18, s. 3 and 12 V. c. 200.

5. The said sum of two hundred thousand dollars annually, shall from year to year be apportioned by order of the Governor of this Province, in Council, between Upper and Lower Canada, in proportion to the relative numbers of the population of the same respectively, as such numbers shall, from time to time, be ascertained by the census next before taken in each of the said divisions respectively. 7 V. c. 9, s. 1.

6. So soon as a net annual income of two hundred thousand dollars shall be realized from the said Permanent Fund, the said grant out of the Provincial Revenue shall cease, and in the meantime the interest arising from the said Permanent School Fund shall be annually paid over to the Receiver-General, and applied towards the payment of the yearly grant of two hundred thousand

dollars. But if in any year after the said annual sum of two hundred thousand dollars is taken off the Consolidated Revenue, the income arising from the said Permanent Fund from any cause whatever, falls short of the annual sum of two hundred thousand dollars, then the Receiver-General of the Province shall pay out of the said Consolidated Revenue such sums of money as are from time to time required to make up the deficiency, but such sums shall be repaid out of any excess of the Income of the said Permanent School Fund in any year over the said sum of two hundred thousand dollars per annum. 12 V. c. 200, s. 4.

7. The Governor in Council may reserve out of the proceeds of the School Lands in any County, a sum not exceeding one-fourth of such proceeds, and out of the proceeds of unappropriated Crown Lands in any County, a sum not exceeding one-fifth thereof, such sums to be funds for public improvements within the County and to be expended under the direction of the Governor in Council. 16 V. c. 159, s. 14.

(2) The particulars of all such sums, and of the expenditure thereof, shall be laid before Parliament within the first ten days of each Session; and not exceeding six per cent. on the amount collected including surveys, shall be charged for the sale and management of lands forming part of one million of acres of land set apart in the Huron Tract for the Common School Fund. 16 V. c. 159, s. 14.

Order in Council, 7th July, 1852.

Upon the memorandum submitted by the Commissioner of Crown Lands relative to the School Lands in the Counties of Bruce and Grey, the Committee of Council recommend that the reduction in price from 12s. 6d. to 10s. an acre, as suggested, be approved, and that the regulations laid down in the said Report be adopted, and further, that a measure be submitted to Parliament to authorize the expenditure of a sum equal to 2s. 6d. an acre of the purchase money on the improvement of the roads and harbors within the said Counties: and that the Committee further recommend that not more than 200 acres be sold to any one individual except upon special recommendation of the Commissioner of Crown Lands, approved by His Excellency in Council.

Certified. (Signed,) W. A. HIMSWORTH.

To the Honourable
The Commissioner of Crown Lands.

Memorandum.

The Commissioner of Crown Lands respectively submits that in order to facilitate the settlement of the Counties of Grey and Bruce, the school lands be reduced from 12s. 6d. to 10s. currency per acre, payable by annual instalments in ten years with interest. That all future sales in the said Counties shall be on the following terms, viz:—That there shall be actual and immediate and continuous settlement during five years; that there shall be cleared annually within the first five years five acres upon each and every lot of one hundred acres, (or fifty acre free grant, as the case may be), with a dwelling house built eighteen feet by twenty-six feet upon each lot; that the occupant shall neither sell nor cut, nor

permit any person whatsoever to sell or cut any of the growing wood upon the said parcel of land, excepting for the clearance of the land, for his fuel and for the buildings and fences he may erect upon the same, until the said lot is paid for and patented; that until paid for and patented all wood cut for other objects on the said parcel of land shall be deemed to have been cut by the occupant, and may be taken and carried away by any person duly authorized by the Government to that effect without any formality whatever; that when the land has been paid for and patented the timber, though owned by the patentee, shall be held liable without any claim for remuneration by the purchaser, or those claiming by or through him, to any dues the Legislature may please hereafter to impose on timber generally.

That on default of the occupant to fulfill and observe any of the conditions above specified, the Commissioner of Crown Lands, his successors in office, or any other officer duly authorized, may, on behalf of the Crown, re-enter and take back the said parcel of land without institution of legal proceedings therefor, or otherwise eject therefrom the occupant, his heirs and assigns, or other persons in possession, and dispose of the same as to the competent authorities shall seem meet.

That the regulations necessary to carry out and insure the details of such actual and *bona fide* be established and enforced by the Commissioner of Crown Lands for the time being.

That application be made to the Legislature to allow 2s. 6d. per acre of the purchase money to be expended on the local roads and harbours, and that no deed issue until the terms of settlement and payment are fulfilled.

(Signed) JOHN ROLPH.

3rd July, 1852.

Crown Lands Office,
Quebec, 30th June, 1854.

In consequence of the agent for the County of Huron having brought under the notice of the Department that he has not any lands remaining at his disposal, while he has incessant applications for purchase, the undersigned begs to submit for the consideration of the Government the propriety of opening for sale the recently surveyed lands in that County, consisting of the Townships of—

Grey,	School Lands	52,448	acres.
"	Crown "	12,678	"
Howick,	School "	3,000	"
"	Crown "	65,508	"
Turnberry,	School "	36,493	"

and to suggest, in the absence of any general regulations being yet adopted under the 2nd and 25th sections of the Land Act, that the school lands, at least in that County, be open for sale, subject to actual settlement at ten shillings per acre, in conformity with the regulations adopted by the Minute in Council of the 7th July, 1852, but that the extent of improvements be limited to two acres annually (for five years) on each 100 acres, with a house (instead of 18 x 26 feet) 16 x 18 feet.

It would also be desirable that the School Lands in the Counties of Bruce, Perth and Grey, should be advertised for sale at the same time.

Upon reference to the accompanying list it will be perceived that some of these Townships are composed partly of School and partly of Crown Lands. The question whether the latter shall be offered for sale, and if so, upon what terms and conditions is submitted for consideration.

The undersigned deems it his duty to bring under the notice of the Government that persons have been squatting to a considerable extent in the recently surveyed Township of Minto, in the County of Wellington, consisting entirely of Crown Lands, which renders it very desirable that the lands should be placed at the disposal of the agent with as little delay as possible, to obviate the embarrassment which is occasioned the Department by persons taking unauthorized possession of public lands.

It is presumed that whatever conditions may be attached to the sale of these lands, and the same will be made applicable to those remaining unsold at present at the disposal of the respective agents for these Counties.

It being understood that notwithstanding the payment of the purchase money in full, no patents issue until after the land has been occupied for five years, and the required extent of improvements made, the period of occupation as squatters and improvements made prior to purchasing, however, being taken into consideration.

(Signed) A. N. MORIN,
Commissioner.

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Copy of a Report of a Committee of the Honourable the Executive Council, dated 30th June, 1854, approved by His Excellency the Governor-General in Council, on the 3rd July, 1854:—

On a Report from a Commissioner of Crown Lands, dated 30th June, 1854 with reference to the opening for sale of certain School and Crown Lands in the Counties of Huron, Perth, Wellington, Bruce and Grey.

The Committee recommended that the said report be approved and adopted, the upset price per acre for the School Lands to be ten shillings, and seven shillings and six pence per acre for the Crown Lands.

(Certified) (Signed) WILLIAM H. LEE.
C. E. C.

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Copy of a Report of a Committee of the Honourable the Executive Council, approved by His Excellency the Governor-General in Council, on the 7th December, 1855.

On a Report dated 24th October, 1855, from the Honourable the Minister of Agriculture, stating that of the sum of £25,000, voted during the last session of the Legislature, for the improvement of the waste lands of the Crown, no part of the share accruing to Upper Canada has yet been appropriated, although several applications have been made for aid from that fund.

That the Honourable W. B. Robinson and G. Jackson, Esquire, M.P.P., have applied for a sum of £1,500 towards the construction of a road from Collingwood to Meaford. This road the Minister of Agriculture states to be of the

utmost consequence, and one requiring the immediate action of the Government; he, however, recommends that a sum of £1,250 only be granted from the above fund, leaving the deficiency, if any, to be made up by the Municipality.

That the sum hitherto granted for the Camden and Madawaska Road is now nearly expended, and has been found insufficient for its completion, and he recommends, for the reasons detailed in his Report, that a sum of £1,750 be appropriated for this road, in the following proportions, viz: £1,000 to complete the south end of that road, an extent of sixteen miles; £500 for the northern portion, ten miles; and £250 for a bridge over the Madawaska, as suggested by Mr. Gibson's Report; which sum of £1,750, together with the grant of £1,250 to the Collingwood and Meaford Road, to be charged to the vote above alluded to.

The Minister of Agriculture also brings under Your Excellency's notice that numerous applications have been made for aid from the Improvement Fund created by the 14th section of the Land Act, 16 Vic., cap. 159, which authorizes one-fourth of the proceeds of the sale of school lands, and one-fifth of those of Crown Lands, to be expended in the several counties in which the sales are effected.

That none of this fund has yet been set apart from the sales hitherto made, although an Order in Council has passed for the expenditure of £25,000 thereout.

That it appears requisite that the Crown Land Department should be directed to apprize the Inspector-General of the amount at the credit of each county for proceeds of sale of both Crown and school lands, that the proportions accruing to the Improvement Fund may be set apart by the Receiver-General for that purpose.

Out of the Improvement Fund referred to, he reccommends that the following sums be appropriated for the objects hereinafter stated, viz:

£1,000 for the construction of a bridge over the Saugeen, on the road leading to Sydenham, and from Elora to Southampton, and the levelling of a hill on the west side of such bridge.

£600 for the construction of two bridges on the Durham road, over a branch of the Saugeen River, in the Township of Brant, according to Mr. Gibson's estimate accompanying the Report, one of the said bridges being at Walker's Mills, and the other a few miles eastward.

£500 for the completion of a road already partially opened, and running north and south through the township of Kinloss, and, with a few slight deviations, between lots 10 and 11 in that township; and,

£500 in addition to a like sum granted on a former occasion, for the construction of a road from Zone Mills to the north-west corner of the Township of Enniskillen, but which latter sum has never been drawn from the Receiver-General for that purpose, on account of its supposed inadequacy to perfect the road as desired. The Minister of Agriculture states that, although the sum of £1,000 would not be sufficient probably to complete more than one-half of the road, the circumstance that the lands on the route are chiefly in the hands of absentees, would lead to the inference that the County Municipality have means at their disposal, from local taxes, to complete any portion that may be left incomplete after the expenditure of the £1,000 above alluded to.

The Committee concur in the several suggestions of the Honourable, the Minister of Agriculture, and humbly advise that they be approved of and carried out.

Certified. (Signed,) WM. H. LEE,
C. E. C.

Copy of a Report of a Committee of the Honourable the Executive Council approved by His Excellency the Governor-General in Council, on the 28th July, 1856.

In reference to the fund for Public Improvements, formed under the 14th Section of the Act 16 Vic., cap. 159.

The Committee recommend that the funds derived from the sales of lands in each particular township, or other municipality, and applicable to the purposes of this fund, and not already apportioned, be applied to the making, maintaining altering or improving of the roads or bridges in each of those townships, or other municipalities, respectively; and be for this purpose distributed and disposed of by and through the Municipal Council of each such township or other municipality; each such Council to report to the Bureau of Agriculture the manner of expenditure of all such moneys, on the first days of January and July in each year, and at any intermediate time within ten days after having been called upon so to do by that department.

(Certified.) WM. H. LEE,
C. E. C.

Copy of a Report of a Committee of the Honourable the Executive Council, approved by His Excellency the Governor-General in Council, on 16th April, 1858.

On a memorandum, dated the 8th April, 1858, from the Honourable the Minister of Agriculture, stating that by Order in Council of 11th of January, 1856, a sum of £800 was granted for the making of a road between Elma and Wallace on one side, and Mornington and Marysborough on the other, in the County of Perth, such amount to be paid out of the Improvement Fund (16 Vic., Cap. 159, Sec. 14,) whenever funds might be available.

That the funds available up to the 31st of December 1855, in all the County of Perth, amounted to £990 5s. 2d., all of which was accruing to the Township of Elma for sales of land therein, no other township having any Improvement Fund up to that date.

That out of this sum of £990 5s. 2d., there had been expended (before the passing of the order granting to each township in its own share of the fund) the sum of £678 15s. 6d., leaving a balance of £311 9s. 8d. due to the said Township of Elma up to the 31st of December, 1855.

That Mr. Daly, M.P.P. for Perth, and the Reeves of Elma and Wallace now apply for the repeal of the order granting £800 from the fund for the road above mentioned, and that the fund be given by the Receiver-General to the townships to which it severally belongs, as the balance of this £800 unexpended is not required for the performance of any existing contract.

The minister therefore recommends that the balance, being £311 9s. 8d., remaining due to Elma on the 31st December, 1855, be paid by the Receiver-General to that Municipality upon receiving the required authority of the Treasurer thereof, and that the division of the fund for 1856 for the County of Perth be in no way affected by the said order of 11th of January, 1856.

The Committee submit the above suggestions to your Excellency's approval.

(Certified.) W. H. LEE,
C. E. C.

Copy of a Report of a Committee of the Honourable the Executive Council approved by His Excellency, the Governor-General in Council, on the 27th May, 1858.

On a petition from the Reeve of the Township of Minto, representing that the Improvement Fund of that municipality has been expended under the direction of the Superintendent of Roads in a very unsatisfactory manner, being laid out near the extreme end of the township. That he hears with alarm of the proposed opening of the boundary line between Minto and Howick and praying that the Municipal Council be allowed to expend their share of the Improvement Fund on such roads as they may consider most beneficial to the township.

The Honourable the Minister of Agriculture reports that the first statement above made is incorrect, the money having been expended almost wholly on the Elora and Saugeen Road, running nearly in a straight line through the township. That the small sum laid out by Order in Council, on lines between the Garafraxa Road and Minto, and between the latter place and Maryboro' were authorized so to be, and public notice of the same given prior to the sale of the Township of Minto.

That there is no ground for the alarm manifested by the applicant respecting the opening of the boundary line between Minto and Howick, and that the privilege granted by Order in Council, permitting the townships to expend the Improvement Fund on such land as they think most require it, will be extended to the municipality of the township of Minto, as soon as the works are completed which are now under contract, and which were undertaken prior to the order referred to.

The Committee recommend that a copy of the above quoted Report be transmitted to the applicant as a reply to his application.

(Certified.)

W. H. LEE,
C. E. C.

Copy of a Report of a Committee of the Honourable the Executive Council, approved by His Excellency the Governor-General in Council, on the 30th October, 1858.

On a Report dated 16th of April, 1858, from the Honourable the Minister of Agriculture, reporting that under the 14th sec. of the Act 16 Vic., cap, 159, an Order in Council was passed appropriating one-fourth of the Grammar and Common School Funds for public improvements within the townships whence the fund is derived. That the fund derived from the sales of School Lands to 31st of December, 1855, has been appropriated.

That the amount arising from the sale of Common School Lands for 1856 is £5,883 11s. 5d., and that from Grammar School Lands for the same year only £766 14s. 9d. That the latter amount, when divided among the various townships from which it has been derived, will be of very inconsiderable value for public improvements: but would be of very great value in aiding Grammar Schools in various ways: for instance, in securing masters for classical schools—many applications for additional Grammar Schools have been made—and recommending that in future none of the proceeds of the sales of the Grammar School

Lands in Upper Canada be diverted from the purpose for which they were originally intended, save the proportion of the sales to the 31st December, 1855, above alluded to.

The Committee recommend that the fund arising from Grammar School Lands be reserved as suggested by the Minister of Agriculture.

(Certified.) W. H. LEE,
C. E. C.

Copy of a Report of a Committee of the Honourable the Executive Council, approved by His Excellency the Governor-General in Council, on the 30th October, 1858.

On a memorandum, dated the 24th September, 1858, from the Honourable the Minister of Agriculture, submitting that the Improvement Fund, collected under the 14th section of the Act 16 Vic., Cap. 159, amounts, (exclusive of the Grammar School proportion of the same), to the sum of $54,266.85, and that applications from municipalities entitled to a share of the same, under Order in Council of 28th July, 1856, have been very numerous and very pressing, many of them having given out contracts on the strength of that fund, now long over due.

The Committee recommended that the Improvement Fund for 1856, (less the amount arising from sale of Grammar School Lands) be disbursed to the municipalities in the manner provided by the Order of the 28th of July, 1856.

(Certified.) W. H. LEE,
C. E. C.

Copy of a Report of a Committee of the Honourable the Executive Council, approved by His Excellency the Governor-General in Council, on 16th March, 1859.

On a petition from the Reeve of the Township of Turnberry, and the acting Reeve of the Township of Howick, representing that much distress and destitution must arise from the inability of farmers in these townships to procure seed wheat, and praying that advances be made to the extent of $1,600 to Turnberry, and $2,700 to Howick out of the Improvement Fund.

The Honourable the Inspector-General recommends that the advance prayed for be granted to the extent above mentioned, and that warrants do issue for the amounts on account of Improvement Fund.

The Committee advise that warrants issue accordingly.

(Certified.) W. H. LEE,
C. E. C

Copy of a Report of a Committee of the Honourable the Executive Council, approved by His Excellency the Governor-General in Council, on 9th June, 1859.

On an application of the Warden of the County of Grey representing that much destitution prevails amongst the farmers in that County, and requesting that debentures to the amount of $10,000 under the Seed Grain Act, be negotiated by the Government, or that the amount due to that County out of the Improvement Fund be paid at once for that purpose.

The Honourable the Minister of Finance recommends that the Receiver-General be authorized to pay to the proper officers of the several township municipalities in the County of Grey the amount of the improvement fund for 1857 due to them; and further to advance forthwith to the proper offices such portion of the Clergy Fund moneys as in his opinion will be due to the said County on the 1st of July, and that warrants do issue accordingly; the expenditure of the said amounts to be in accordance with the Statutes regulating the same.

The Committee submit the above suggestions for your Excellency's approval

(Certified.) W. H. LEE,
C. E. C.

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Copy of a Report of a Committee of the Honourable the Executive Council, approved by His Excellency the Governor-General in Council, on the 10th January, 1860.

The Committee have had under consideration a letter dated 5th January, 1860, from the Secretary to the Bureau of Agriculture, requesting the issue of a warrant for the sum of $11,212 in favour David Gibson, Esq., Chief Superintendent of Colonization Roads, such amount being the balance of the Improvement Fund accruing to the Counties of Huron and Bruce for the year 1857, less the sums belonging to Howick and Turnberry in the former county which have been otherwise appropriated; and also another warrant for the sum of $20,000 in favour of the said David Gibson, and to be charged to the Colonization Road Fund. The Secretary states that the above warrants, amounting to the sum of $31,212, are to be applied by Mr. Gibson in the liquidation of an overdrawn balance at the Bank of Upper Canada, and in payments to contractors for works already completed, and that their issue is recommended by Mr. Langton in his Report of the 4th instant, accompanying the present application.

The Committee recommended the issue of the warrants for the above-mentioned accounts.

(Certified.) W. H. LEE,
C. E. C.

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Copy of a Report of a Committee of the Honourable the Executive Council, approved by His Excellency the Governor-General in Council, on the 9th October, 1860.

On an application of Albert Pellew Salter and Honourable Colonel Prince, for an appropriation of $500 out of the Improvement Fund of Sault Ste. Marie, for the completion of the street through the town plot of said village; also, on the petition of sixteen of the inhabitants of St. Joseph's Island, and the recommendation of Mr. A. P. Salter, for the sum of $400 for the construction of a road across said island, to facilitate the communication from the south side of the island to the Post Office at Bruce Mines.

The Report, dated 5th instant, from the Bureau of Agriculture, recommends that the $500 be specially appropriated to making a road through the town plot of Sault Ste. Marie; and also that $400 be granted for the construction of a road across St. Joseph's Island, provided the right of way be in each case secured therefor, and the appropriations expended under the direction of Mr. Salter.

The Committee advise that the appropriations suggested be made and charged to the Improvement Fund for the respective localities for the year 1857.

(Certified.) WM. H. LEE,
C. E. C.

Copy of a Report of a Committee of the Honourable the Executive Council, approved by His Excellency the Governor-General in Council, on the 6th March, 1861.

On the recommendation of the Honourable the Commissioner of Crown Lands, the Committee advise that the Order in Council of 7th December, 1855, authorizing the payment of the Improvement Fund created by the Land Act, 16 Vic., chap. 159, be rescinded.

(Certified.) WM. H. LEE,
C. E. C.

(Copy.)

The undersigned has the honour to submit the following statement and recommendation with reference to the "Improvement Fund" for Canada West, authorized by 16 V., c. 159, s. 14, (1853.)

The said Fund was applied by Order in Council of the 26th July, 1856 which order had a retrospective action as far back as the date passing the above Act, August, 1853.

The said Fund has been regularly paid (with the exception of some few balances that remain to certain municipalities) down to the end 1859, at which date the then Commissioner of Crown Lands considered it expedient to stop further payments to the Fund. With this view he omitted on the amended Land Act of 1860, the clause authorising the creation of the Fund, but in March, 1861, it was ascertained that the authority for the Fund existed at the date of

the amended Land Act in the School Act, and not in the Land Act, as had been supposed. On the 6th March, 1861, an Order in Council was passed rescinding that of 26th July, 1856.

It appears to the undersigned that the Improvement Fund continued to accrue legally, and may be fairly claimed by the various municipalities of Canada West, down to the above date of 6th March, 1861, and he therefore respectfully recommends that the distribution thereof be made to them accordingly.

(Signed,) WILLIAM McDOUGALL,
Commissioner.

CROWN LAND DEPARTMENT,
17th September, 1863.

The foregoing Orders in Council and Correspondence are to be found in the Sessional Papers of the Province of Canada, 1863, Volume 22, No. 16.

(Ontario Sessional Papers, 1869, Vol. 2, No. 29, page 42.)

RUSSELL HOUSE,
OTTAWA, October 29th, 1869.

DEAR SIR,—Enclosed you will find a copy of my "revised statement shewing the debt of the late Province of Canada;" also copies of the Orders in Council relating to the Improvement Fund of U. C.

I understand you to assent to the correctness of charging to the debt the balance of 10 per cent. on the purchase money paid by the Canada Land and Emigration Company, amounting to $12,928.37.

There is but one other item among the debits which remains undetermined, and that is, the ¼ and 1-5 respectively, of moneys received by the late Province of Canada, from the doing away of the Upper Canada Improvement Fund (6th March, 1861), to Confederation (1st July, 1867) from sales of School and Crown Lands made during the existence of that fund, that is, from the 7th of December, 1855, to the 6th of March, 1861. As you will observe, I have not extended the amount of the Common School Fund, for from this fund, as I contend, must be deducted, when correctly ascertained, ¼ of the sum received or paid between the 6th March, 1861, and the 1st July, 1867, on account of school lands sold during the existence of the U. C. Improvement Fund, and this sum, with ¼ of the sum received or paid during the same period on account of Crown Lands sold during the existence of that fund, when ascertained, must be added to the balance of that fund, ($5,119.08) and the total carried into the debt of the late Province.

I will have the printed return relating to the U. C. Improvement Fund carefully re-examined and revised in the Crown Lands Department, and, when completed will send you an official statement of the exact figures.

Inasmuch as I verbally fully discussed this matter with you, I do not think it necessary, at present, to make any further observations on this point.

There is another point not relating to the debt to which I directed your attention, and to which I shall, so soon as the opportunity presents itself, call the

attention of the Minister of Finance. I refer to the manifest unfairness of the proposition to pay 6 per cent. on the compensation to Seigniors and only 5 per cent. on the Upper Canada Building Fund, a parrallel fund, and growing out of the same identical legislation.

It seems to me no one can argue for a moment that it would be fail to Ontario that any discrimination should be made in the rate of interest paid on these two parallel funds. However, I defer discussion on this point until the Minister of Finance shall be in a position to give it his deliberate consideration.

I am, dear Sir,
Your obedient servant,

(Signed) E. B. WOOD

JOHN LANGTON, Esquire,
Auditor, Ottawa.

Copies of the Orders in Council of 27th February, 1855, 7th December, 1855, 6th March, 1861. Enclosed—See ante pages 23, 24 and 34.

(Ontario Sessional Papers, 1869, Vol. 2, No. 29, page 50.)

TREASURER'S DEPARTMENT, ONTARIO,
TORONTO, November 20th, 1869.

SIR,—I have the honor to enclose herewith to you, through the Auditor-General, a "revised statement of the debt of the late Province of Canada."* All the items in the debits and deductions have been agreed upon, excepting the following:—

From the Common School Fund ($1,733,224.47) I deduct, over and above the investments and interest thereon ($87,580.00), the sum of $124,685.18, that being one-fourth part of the moneys received by the late Province of Canada between the 6th March, 1861, the day of rescinding the Order in Council of the 7th December, 1855, and the first July, 1867, the day the B.N. America Act came into operation, *on school lands sold during the existence of the U.C. Improvement Fund.* To the U.C. Improvement I add this same sum (124,685.18), and also one-fifth of the moneys received *during the same period* ($101,771.68) from Crown Lands also sold *during the existence of that Fund*, reducing the Common School Fund to $1,520,959.29, but increasing the Improvement fund from $5,119.08, to $231,545.94. The revision made simply increases the debt by $101,771.68, but in no way affects the Dominion, as on the excess of debt over $62,500,000, the Province must pay to the Dominion 5 per cent.

It will be observed by reference to the enclosed statement from the Crown Lands Department, the accuracy of which has been thoroughly tested, that I have deducted, as it was proper I should, 20 per cent. for the expenses of management and collection.

* See Statement 20.

As to the justice of making these moneys a part of the debt of the late Province, I beg to offer a few observations.

At the passing of the School Lands Act in 1853, 16 V. c. 159, the lands in question were wild and remote from settlement; and it was held out as an inducement to intending settlers, that if they would go on and purchase and settle these lands, one-fourth of the purchase money of the School Lands, and one-fifth of that of the Crown Lands should be expended in opening up and constructing roads, and in making other improvements in the locality in which these lands were situate. Under these encouraging promises, for the fulfilment of which the faith of the Crown was pledged, now the northern counties, where these lands were rapidly filled up with hardy settlers. The Crown kept faith with the settlers till in the month of March, 1861, an Order in Council was passed, doing away with further payments to the U.C. Improvement Fund. The state of political parties was such from that time on to Confederation that, although the good faith of the Government in this matter was prominently brought to the notice of Parliament, no decisive action was taken to restore to the settlers the rights of which they had been deprived by an Order in Council. What they claim—and I think I may say with very great force—is, that as to the lands which were brought under the pledged faith of the Government, that one-fourth and one-fifth respectively of the proceeds should be expended in local improvements, the Government shall make good its promises. This, let it be observed, applies to no lands *sold subsequent to the 6th March*, 1861, In respect of the proceeds of lands sold subsequent to that date, it is not contended that the settlers have any claim. But as to the lands sold *between 14th June*, 1853, *and the 6th of March*, 1861, the settlers were given to understand by the agents of the Department, and by public notices and advertisements, that one-fourth and one-fifth respectively of the paid purchase money of School and Crown Lands should be expended as I have indicated.

The settlers are importunate in their demands for justice, as you will see from the enclosed notice of resolutions, which are to be moved in our Assembly. I do not see on what ground they can be resisted. Indeed, it seems to me it would not be honourable in any Government to attempt opposition.

You will observe that I ask to charge into the debt only what was received by the late Province on sales made prior to 6th March, 1861—from 6th March, 1861, to the Act of Confederation. What has since been received on such sales must be accounted for by the Province of Ontario.

I have briefly indicated to you the reasons why these moneys should be charged in the debt. As bearing upon this subject, I have furnished the Auditor-General with copies of four Orders in Council, bearing date, respectively, the 27th February, 1855, the 7th December, 1855, the 28th July, 1856 and the 6th March, 1861, to which I beg to call your attention, as also to 16 V., c. 159*.

In leaving this subject, permit me to say, that it is quite impossible for any Government in Ontario to resist the just demands of these settlers, inasmuch as, aside from the intrinsic rightfulness of their claims, more than half of the members of the Assembly represent constituencies more or less directly interested, as you will see from the enclosed printed Return sent down to the Assembly.

In so far as I know, I have now noticed all the items in the revised statement of debt, in respect of which there can be any difference of opinion or which require explanation.

* For copies of all Orders in Council bearing upon the U.C. Improvement Fund, reference is made to Sessional Papers of 1863, Vol. 22, No. 16, of Parliament of late Province of Canada.

May I indulge the hope that you will give this matter your earnest attention with as little delay as convenient, in order that I may submit the *closed statement of debt* to His Excellency the Lieutenant-Governor in Council, for his approval and confirmation.

I have the honour to be,
Your most obedient servant,

E. B. WOOD.

To the Honourable Sir Francis Hincks,
Minister of Finance,
Ottawa.

Extract from the Revised Statement, showing the debt of the late Province of Canada, enclosed by the Honourable E. B. Wood, Treasurer of Ontario, to Mr. Langton, on 29th October, 1869, and to Sir Francis Hincks, on 30th November, 1869.

"U. C. Improvement Fund, prior to abolition by Order in Council of 6th March, 1861.....	5,180 04	
"Less receipt in former years reversed.....	60 96	
		$5,119 08
"One-fourth receipts of Common School Lands, sold during existence of the U. C. Improvement Fund, from the day of the abolition of that fund, to 1st July, 1867...	$124,685 18	
"One-fifth receipts on Crown Lands so sold and money so received.....	101,761 68	
		$226,456 86
		$231,575 94

The Revised Statement printed in full, Ontario Sessional Papers, 1869, Vol. II., No. 29, p. 45.

REPORT OF THE SELECT COMMITTEE ON THE LAND IMPROVEMENT FUND.

(*Presented 10th December, 1869. Page 83 Journals of Assembly.*)

To the Honourable the Legislative Assembly of Ontario :—

The Select Committee to whom was referred the petitions relating to the Land Improvement Fund, beg leave to report as follows :—

The Committee have held many meetings, and examined numerous witnesses and papers, and carefully considered the matter referred to them, and they find unanimously :

1. That on the 17th July, 1852, the Government of the day passed an Order in Council in the words following :—"Upon the memorandum submitted by the "Commissioner of Crown Lands relative to the School Lands in the Counties of

"Grey and Bruce. The Committee in Council recommend that the reduction "in price from 12s. 6d. to 10s. an acre, as suggested, be approved, and that the "regulations laid down in the said Report be adopted, and further that a measure "be submitted to Parliament, to authorize the expenditure of a sum equal to 2s. "6d. an acre of the purchase money on the improvement of the roads and harbors "within the said Counties, and the Committee further recommend that not more "than 200 acres be sold to any one individual, except upon special recommen-"dation of the Commissioner of Crown Lands approved by His Excellency in "Council."

2. That by the Land Act of 1853, it was enacted that it should be lawful for the Governor in Council to reserve out of the proceeds of the School Lands in any County a sum not exceeding one-fourth of such proceeds as a fund for public improvements within the county, to be expended under the direction of the Governor in Council, and also to reserve out of the proceeds of unappropriated Crown Lands in any county, a sum not exceeding one-fifth, as a fund for public improvements within the County, to be also expended under the direction of the Governor in Council.

3. That at this period there were large tracts of Crown and School Lands in various Counties unsettled, and it was the policy of the country to encourage the settlement thereof as much as possible.

4. That one of the greatest obstacles to settlement was the want of roads and bridges, and it was in order to induce the speedy settlement of the country by providing means for the construction of such works that the said Order and Act were passed.

5. That shortly after the passing of the said Act, large numbers of persons purchased and settled on the vacant Crown and School Lands, and within a very few years they were well settled, four-fifths of the School Lands having been settled in 1853, 1854 and 1855.

6. That the general belief and opinion of the settlers was that they would be entitled to have one-fourth of the price of School Lands and one-fifth of the price Crown Lands expended within the Municipalities in the construction of roads and bridges.

7. That this belief and opinion was entertained by several of the Crown Lands Agents who sold the lands.

8. That several of such agents stated to the intending settlers, that if they became settlers, one-fourth of the price of School Lands and one-fifth of the price of Crown Lands would be so expended as aforesaid, and that thus the price of their lands was practically less than the stated price by these amounts which would otherwise have to be raised by local taxation for the same purposes.

9. That large numbers of settlers purchased on the understanding with the agent stated in the preceding paragraph, especially in the County of Bruce where the population increased from 2,837 in 1852, to 27,494 in 1861.

10. That the Government of the day, in an Order in Council, dated on 27th February, A.D. 1855, referred to the Improvement Fund as being established by the Land Act of 1853, and ordered certain expenditure thereout; and in another Order in Council dated on 27th March, A.D. 1855, further assumed the existence and availability of the fund.

11 That on the 7th December, 1855, the Government of the day in an Order in Council referred to the said fund in the words following :—"The Minister of "Agriculture also brings under your Excellency's notice that numerous applica-

"tions have been made for aid from the Improvement Fund, created by the 14th "Section of the Land Act, 16th Vic., Cap. 159, which authorizes one-fourth of the "proceeds of the sale of School Lands and one-fifth of those of Crown Lands to "be expended in the several counties in which the sales are effected. That "none of this fund has, as yet, been set apart from the sales hitherto made, "although an Order in Council has been passed for the expenditure of £25,000 "thereout. That it appears requisite that the Crown Lands Department should "be directed to apprise the Inspector General of the amount at the credit of "each County for proceeds of sale of both Crown and School Lands, that the "proportions accruing to the Improvement Fund may be set apart by the "Receiver-General for that purpose. Out of the Improvement Fund referred "to, he recommends that the following sums be appropriated for the objects "hereinafter stated, viz:—(Stating several applications)."

12. That on the 28th day of July, A.D. 1856, the Government of the day passed an Order in Council in the following words:—"In reference to the "Fund for Public Improvements formed under the 14th Section of the Act, "16 Vic., Cap. 15 . The Committee recommended that the funds derived from "the sales of lands in each particular Township or other Municipality, and "applicable to the purposes of this fund and not already apportioned, be applied "to the making, maintaining, altering, or improving the roads or bridges in "each of those Townships or other Municipalities, respectively, and be for this "purpose distributed and disposed of by and through the Municipal Council of "each such Township or other Municipality: each such Council to report to "the Bureau of Agriculture the manner of expenditure of all such moneys, on "the first days of January and July in each year, and at any intermediate "time within ten days after having been called upon to do so by that Depart-"ment."

13. That on several occasions during the years 1857, 1858, 1859 and 1860, the Government of the day, by Orders in Council, appropriated to purposes of local improvement, moneys arising out of the Improvement Fund.

14. That books were opened in the Crown Lands Department, labelled, "Road Improvement Fund," with a heading to each page in the words, "State-"ments of the amounts available for public improvements on sales of Crown "Lands, Grammar School Lands and Common School Lands, under 16 Vic., "Cap. 159, Sec. 14, in each Township in the County of " in which books the accounts of the fund were kept.

15. That on the 6th March, A.D. 1861, the Government of the day made an Order in Council in the following words:—"On the recommendation of the "Honourable the Commissioner of Crown Lands, the Committee advise that "the order in Council of 7th December 1855, authorizing the payment of the "Improvement Fund created by the Land Act, 16 Vic., Cap. 159, be rescinded," —but no order has been made rescinding that of 28th July, 1856.

16. That no part of the Improvement Fund accruing since the 6th of March, 1861, has been applied to the purposes of the fund.

17. That large sums of money have since 6th March, 1861, been received by the Government of the late Province of Canada, from the sales of Crown and School Lands made between the date of the passing of the Land Act and the 6th March, 1861.

18. That further, large sums have been received on account of such sales by the Government of Ontario, and further, large sums remain due on account of such sales.

19. That large sums have been expended, and large debts incurred by the various Municipalities for the construction of roads and bridges, which would otherwise have been in whole or part constructed by means of the Improvement Fund.

20. The Committee beg leave further to report that they have appended to this their Report, the evidence of the witnesses, all of whom were persons of credit, and the material papers produced.

21. The committee beg leave, lastly, to report that they abstain from stating any opinion or making any recommendation, because they understand the order of reference to confine them to the ascertainment of the facts for the information of the Legislature.

All of which is respectfully submitted.

T. B. PARDEE,
Chairman.

(*Ontario Sessional Papers, 1873, No. 37.*)

HONOURABLE J. G. ROBERTSON TO HONOURABLE E. B. WOOD.

TREASURY DEPARTMENT, QUEBEC, 21st January, 1870.

SIR,—I have the honour to acknowledge the receipt of your letters of the 7th and 12th January instant, referring to the amounts which you pretend should be added to the statement of the debt of the Province of Canada Land and Emigration Company, and the other to the Upper Canada Improvement Fund, and also the report of the Select Committee on the Land Improvement and the Return to an address of the Legislative Assembly of Ontario, respecting the purchase of ten townships *en bloc* by the Canada Land and Emigration Company.

A careful and attentive perusal of these documents as well as of chap. 26 of the Consolidated Statutes of Canada, leaves no doubt in my mind that the pretensions of Ontario are unfounded and inadmissable.

The claim of the Canada Land and Emigration Company is at least but a contingent one, the existence of which depends upon the construction of the roads, and which, moreover, may be compensated by the forfeiture or extra price of 2s. 6d. per acre, which the company is bound to pay as a penalty for non-performance of settlement duties during the time specified. If owing to the recent action of the Government of Ontario, it is found proper to discharge the Canada Land and Emigration Company, as it demands by its petition of the 22nd August, 1868, from its obligation, the Province of Quebec cannot be called upon to contribute, which it would if that sum was added to the debt of the Province of Canada.

The whole, under the British North America Act, 1867, passed with the lands to Ontario, which is bound to meet the claim if any is hereafter made good, and to enforce the execution of the contract or get the extra price stipulated as a penalty for its non-fulfilment.

As to the sum which you propose to add to the amount set down in the statement of affairs as due to the Upper Canada Improvement Fund. The fund, under the law and the Order in Council, was to be composed, not of the amounts due by the purchasers of the lands, but of those received by the Crown Lands Department during its existence.

The Receiver-General, under the Order in Council, could set apart as therein directed, only the amounts which he had actually received.

Independently of these considerations the introduction of such pretensions not alluded to in the conference at Montreal, would involve the re-opening of the whole question as regards the surplus debt, which if once done, it is impossible to say where it might end.

As I have before said, if such question is re-opened, the whole ground may have to be gone over, when Quebec will claim the privilege of putting in claims for consideration in the discussion of the same.

I have the honour to be, Sir,
Your obedient servant,

(Signed.) J. G. ROBERTSON,
Treasurer, Province of Quebec.

AWARD.

To all to whom these presents shall come:—

The Honourable JOHN HAMILTON GRAY, of the City of St. John, in the Province of New Brunswick, and the Honourable DAVID LEWIS MACPHERSON, of the City of Toronto, in the Province of Ontario, Send Greeting:

Whereas, by the British North America Act, 1867, it is enacted that the division and adjustment of the debts, credits, liabilities, properties, and assets of Upper Canada and Lower Canada, shall be referred to the arbitrament of three Arbitrators, one chosen by the Government of Ontario, and one by the Government of Quebec, and one by the Government of Canada;

And whereas, the said John Hamilton Gray was duly chosen under and in accordance with the provisions of the said Act, as Arbitrator, by the Government of Canada, the said David Lewis Macpherson by the Government of Ontario, and the Honourable Charles Dewey Day, of Glenbrooke, in the said Province of Quebec, by the Government of Quebec.

Now, therefore, the said Arbitrators having taken upon themselves the burden of the said Arbitration, the said John Hamilton Gray and David Lewis Macpherson being a majority of the said Arbitrators, do award, order and adjudge of and upon the premises as follows, that is to say:—

I. That the amount, by which the debt of the late Province of Canada, exceeded, on the thirtieth day of June, one thousand eight hundred and sixty-seven, sixty-two millions five hundred thousand dollars, shall be and is hereby divided between and apportioned to, and shall be borne by, the said Provinces of Ontario and Quebec respectively, in the following proportions, that is to say,—the said Province of Ontario shall assume and pay such a proportion of the said amount, as the sum of nine millions eight hundred and eight thousand seven hundred and twenty-eight dollars and two cents bears to the sum of eighteen millions five hundred and eighty-seven thousand five hundrdred and twenty dollars and fifty-seven cents: and the said Province of Quebec shall assume and

pay such a proportion of the said amount, as the sum of eight millions seven hundred and seventy-eight thousand seven hundred and ninety-two dollars and fifty-five cents bears to the sum of eighteen millions five hundred and eighty-seven thousand five hundred and twenty dollars and fifty-seven cents.

II. That the assets hereinafter in this cause enumerated shall be, and the same are hereby declared to be the property of and belonging to the Province of Ontario, namely:—

1. Debt from the Upper Canada Building Fund to the late Province of Canada, (enumerated in the Fourth Schedule to the said British North America Act, 1867, as Upper Canada Building Fund, Lunatic Asylum, Normal Schools,) —Lunatic Asylums, $30,800: Normal Schools, $6,000 ...	$36,800 00
2. Debt from the Law Society, Upper Canada, to the late Province of Canada	156,015 61
3. Debts to the late Province of Canada under the Consolidated Municipal Loan Fund of Upper Canada	6,792,136 39
4. Debt from the Agricultural Society, Upper Canada, to the late Province of Canada	4,000 00
5. Debt from the University Permanent Fund to the late Province of Canada	1,220 63

III. That the assets hereinafter in this clause enumerated shall be, and the same are hereby declared to be the property of, and to belong to the Province of Quebec, namely:—

1. The debt from the Aylmer Court House to the late Province of Canada for six per cent Provincial debentures issued on account of the said Court House and assumed by the Dominion of Canada, and charged in the debt of the late Province of Canada	$2,000 00	
And for certain charges paid by the said late Province of Canada in respect of the said Court House	1,239 70	
		$3,239 70
2. Debt from the Montreal Court House to the late Province of Canada for six per cent. Provincial debentures issued on account of the said Court House and assumed by the Dominion of Canada, and charged in the debt of the late Province of Canada	$19,600 00	
For advances made to the said Court House by the said late Province of Canada.....	18,996 21	
		$114,596 21
3. Debt from the Kamouraska Court House to the late Province of Canada for balance of certain charges in respect of the said Court House paid by the late Province of Canada		$201 27
4. Debt from the Royal Institution, otherwise the McGill College, to the late Province of Canada, of the balance of a loan made by the said late Province to that Institution		7,790 00

5. Debt under the Consolidated Municipal Loan Fund of Lower Canada to the late Province of Canada.....	2,939,429	97
6. Advances made in excess of the Legislative School Grant (described in the Fourth Schedule to the said British North America Act, 1867, as "Lower Canada Legislative Grant").....	$28,494	73
7. Debt to the late Province of Canada under the Quebec Fire Loan	264,254	65
8. Debt to the late Province of Canada for advances made to or on account of certain Municipalities in the County of Temiscouata, described in the said Fourth Schedule as "Temiscouata Advance Account").....	3,000	00
9. Debt from the Education Office in Lower Canada to the late Province of Canada for the balance unpaid of a defelcation in ths said office to the said late Province, (described in the said Fourth Schedule as "Education East").....	290	10
10. Debt from the Building and Jury Fund, Lower Canada to the late Province of Canada for loans and advances made to it by the said late Province of Canada.....	116,475	61
11. Debt from the Municipalities Fund of Lower Canada to the late Province of Canada for advances made to or on the credit of that fund, (described in the said Fourth Schedule as "Municipalities Fund.").....	484,224	33
12. Debt from the Lower Canada Superior Education Income Fund to the late Province of Canada for advances made from time to time by the said late Province.....	234,281	46
13. Montreal Turnpike Trust	188,000	00

IV. And as to the said Montreal Turnpike Trust, the said Arbitrators further find, award and adjudge as follows:—

"Whereas the said sum of one hundred and eighty-eight thousand dollars is secured by debentures issued upon the credit of the said Trust, and guaranteed by the late Province of Canada, and the said Trust has hitherto met the payments upon such debentures, and the payment thereof has not been assumed by the Dominion of Canada, nor has the said sum of one hundred and eighty-eight thousand dollars been charged by the said Dominion in the debt of the late Province of Canada, which charge, if made, would increase by one hundred and eighty-eight thousand dollars, the excess of the said debt on the thirtieth day of June, one thousand eight hundred and sixty-seven, above sixty-two millions five hundard thousand dollars; Know, therefore, the said Arbitrators having assigned the said Trust as an asset of the said Province of Quebec, do hereby adjudge and award that the said Province of Quebec shall hereafter indemify, protect and save harmless the said Dominion and the said Province of Ontario against any charge upon, or payment by the said Dominion in respect of the said debentures, or the said guarantee, or in respect in any way of the said Trust.

V. That the following Special, or Trust Funds, and the moneys thereby payable, including the several investments in respect of the same or any of them are, shall be, and the same are hereby declared to be the property of and to

belong to the Province of Ontario, for the purposes for which they were established, namely:—

1. Upper Canada Grammar School Fund.

2. Upper Canada Building Fund.

3. Upper Canada Municipalities Fund.

4. Widows' pensions and uncommuted stipends, Upper Canada, subject to the payment of all legal charges thereon.

5. Upper Canada Grammar School Income Fund.

6. Upper Canada Improvement Fund.

7. Balance of special appropriations in Upper Canada.

8. Surveys ordered in Upper Canada before 30th of June, 1867.

9. Amount paid and payable by Upper Canada to the Canada Land and Emigration Company.

VI. That the following Special, or Trust Funds and the moneys thereby payable, including the several investments in respect of the same, or any of them, are, shall be, and the same are hereby declared to be the property of and to belong to the Province of Quebec, for the purposes for which they were established, namely:—

1. Lower Canada Superior Education Fund.

2. Lower Canada Superannuated Teachers' Fund.

3. Lower Canada Normal School Building Fund.

4. Widows' pensions and uncommuted stipends, Lower Canada, subject to all legal charges thereon.

5. Balance of special appropriations in Lower Canada.

6. Surveys ordered in Lower Canada before 30th June, 1867.

VII. That from the Common School Fund, as held on the thirtieth day of June, one thousand eight hundred and sixty-seven, by the Dominion of Canada, amounting to one million seven hundred and thirty-three thousand two hundred and twenty-four dollars and forty-seven cents, (of which fifty-eight thousand dollars is invested in the bonds or debentures of the Quebec Turnpike Trust, the said sum of fifty-eight thousand dollars being an asset mentioned in the Fourth Schedule to the British North America Act, 1867, as the Quebec Turnpike Trust), the sum of one hundred and twenty-four thousand six hundred and eighty-five dollars and eighteen cents shall be, and the same is hereby taken and deducted and placed to the credit of the Upper Canada Improvement Fund, the said sum of one hundred and twenty-four thousand six hundred and eighty-five dollars and eighteen cents, being one-fourth part of moneys received by the late Province of Canada, between the sixth day of March, one thousand eight hundred and sixty-one, and the first day of July, one thousand eight hundrrd and sixty-seven, on account of Common School lands sold between the fourteenth day of June, one thousand eight hundred fifty-three, and the said sixth day of March, one thousand eight hundred and sixty-one.

VIII. That the residue of the said Common School Fund, with the investments belonging thereto, as aforesaid, shall continue to be held by the Dominion of Canada, and the income realized therefrom, from the thirtieth day of June, one thousand eight hundred and sixty-seven, and which shall be hereafter realized

therefrom, shall be apportioned between and paid over to the respective Provinces of Ontario and Quebec as directed by the fifth section, chapter twenty-six of the Consolidated Statutes of Canada, with regard to the sum of two hundred thousand dollars in the said section mentioned.

IX. That the moneys received by the said Province of Ontario since the thirtieth day of June, one thousand eight hundred and sixty-seven, or which shall hereafter be received by the said Province from or on account of, the Common School lands set apart in aid of the Common Schools of the late Province of Canada shall be paid to the Dominion of Canada to be invested as provided by section three of said chapter twenty-six of the Consolidated Statutes of Canada, and the income derived therefrom shall be divided, apportioned, and paid between and to the said Provinces of Ontario and Quebec respectively as provided in the said fifth section, chapter twenty-six of the Consolidated Statutes of Canada, with regard to the sum of two hundred thousand dollars in the said section mentioned.

X. That the Province of Ontario shall be entitled to retain out of such moneys six per cent. for the sale and management of the said lands, and that one-fourth of the proceeds of the said lands, sold between the fourteenth day of June, one thousand eight hundred and fifty-three, and the said sixth day of March, one thousand eight hundred and sixty-one, received since the thirtieth day of June, one thousand eight hundred and sixty-seven, or which may hereafter be received after deducting the expenses of such management as aforesaid, shall be taken and retained by the said Province of Ontario for the Upper Canada Improvement Fund.

XI. The Crown Lands Suspense Account, amounting to one hundred and twelve thousand seven hundred and forty-eight dollars and sixty-three cents, and the Crown Lands Department, amounting to two hundred and fifty-three thousand and eighty-nine dollars and seventy-six cents, being the items so described in the Public Accounts of the late Province of Canada, having been omitted respectively from the statement of the debt of the said Province in such accounts, and from the assets in the Fourth Schedule to the British North America Act, 1867, the said Arbitrators award and adjudge that the said Province of Ontario shall satisfy all claims and receive all moneys in respect of the said Crown Lands Suspense Account, and the said Crown Lands Department connected with or arising from lands situate in the said Province of Ontario, and that the said Province of Quebec shall satisfy all claims and receive all moneys in respect of the said Crown Lands Suspense Account and the said Crown Lands Department connected with or arising from lands situate in the said Province of Quebec.

XII. As to the Montreal harbour the said Arbitrators find that the debt due on account of four hundred and eighty-one thousand four hundred and twenty-five dollars and twenty-seven cents secured by debentures issued by the Montreal Harbour Commissioners has not been charged in the statement of the debt of the late Province of Canada. And they award, direct and adjudge that should the Dominion of Canada hereafter pay anything by reason of the liability of the said Dominion on account of the said debentures, the said two Provinces shall repay to the said Dominion any sum so paid in the same proportions respectively, as the said Provinces are hereinbefore directed to bear and pay the excess on the thirtieth day of June, one thousand eight hundred and sixty-seven, above sixty-two millions five hundred thousand dollars of the debt of the late Province of Canada.

XIII. That all the lands in either of the said Provinces of Ontario and Quebec respectively, surrendered by the Indians in consideration of annuities to them granted, which said annuities are included in the debt of the late Province of Canada, shall be the absolute property of the Province in which the said lands are respectively situate, free from any further claim upon, or charge to the said Province in which they are so situate, by the other of the said Provinces.

XIV. As to all the personal property being the joint property of the said Provinces of Ontario and Quebec, not hereinbefore specially mentioned or dealt with, and not appropriated by the said British North America Act, 1867, including the library of Parliament at Ottawa, the Arbitrators find that it is not expedient to divide the said properties or to divert them from the public purposes for which they are used and required by the Dominion of Canada. They, therefore, find and award that the value of the said properties is and shall be taken to be two hundred thousand dollars, and that the Dominion of Canada may retain and acquire the same properties on payment to the said Provinces of the said sum of two hundred thousand dollars in the same proportion as is mentioned in the first paragraph hereof in respect to the excess of debt of the late Province of Canada on the thirtieth day of June, one thousand eight hundred and sixty-seven, above sixty-two millions five hundred thousand dollars, that is to say, to Ontario the sum of one hundred and five thousand five hundred and forty-one dollars, and to Quebec the sum of ninety-four thousand four hundred and fifty-nine dollars, and upon such payment the Dominion of Canada shall become the absolute owner of the said properties. But should the Dominion of Canada not so acquire the said properties within two years from the date of this award, the Province of Quebec may acquire the said properties by the payment to the Province of Ontario, within three months from the expiration of the said two years, of the sum of one hundred and five thousand five hundred and forty-one dollars, and should the Province of Quebec not so acquire the said properties within the time aforesaid, the Province of Ontario shall, within three months next thereafter, pay to the Province of Quebec the sum of ninety-four thousand four hundred and fifty nine dollars, and shall thereupon become the absolute owner of such properties.

XV. That the said several sums awarded to be paid, and the several matters and things awarded and directed to be done by or with regard to the parties to this reference respectively as aforesaid, shall respectively be paid, received, done, accepted and taken as and for full satisfaction and discharge, and as a final end and determination of the several matters aforesaid.

In witness whereof the said John Hamilton Gray and David Lewis Macpherson, two of the said Arbitrators, have hereunto set their hands this third day of September, in the year of our Lord one thousand eight hundred and seventy.

J. H. GRAY.
D. L. MACPHERSON.

Signed and published the third day of September, 1870,
in the presence of:

CHRISTOPHER ROBINSON, of the City of Toronto, Barrister-at-law;
FREDERICK FINCH, of the City of Toronto, Law Stationer.

(Oatario Sessional Papers, 1873, No. 37.)

EXTRACT—TREASURER WOOD TO MINISTER OF FINANCE.

TORONTO, 22 October, 1870.

(3) Upper Canada Improvement Fund..... $231,575 94

This stands in the debt of the late Province, as it appears from the Public Account of 1868, at $5,119.08. But you will recollect the discussions we have had on this Fund, and the conclusion to which you informed me your Government had come; that, inasmuch as the arbitrators in dealing with the Common School Fund would necessarily have to decide as to the allowance or disallowance to the Upper Canada Land Improvement Fund of one-fourth of the receipts from Common School Lands paid between the 6th March, 1861, and the 1st July, 1867: on school lands sold between the 14th June, 1853, and the 6th March, 1861, your Government would be bound by and follow that decision in respect of one-fifth of the receipts from Crown Lands sold and paid during the respective periods above mentioned. And you informed me that an Order in Council to that effect had been passed.

The arbitrators have decided that one-fourth of the proceeds of the Common School lands shall be added to the Improvement Fund. Therefore your Government are bound by its solemn promise to add to the same fund one-fifth of the proceeds of the Crown lands.

This item will therefore stand in the debt of the late Province of Canada as follows:

Balance of the Fund on the 30th June, as stated in the Public Accounts....	$5,119 08	
One-fourth proceeds of the Common School lands received between 6th March, 1861, and 1st July, 1867, on Common School lands sold between 14th June, 1853, and 6th March, 1861.....	124,685 18	
One-fifth proceeds of Crown lands received and sold respectively during the same periods	101,771 68	
	$226,456 86	
		$231,575 94

(Ontario Sessional Papers, 1882-83, Vol. XV., No. 33, pages 9, 10, 11.)

TORONTO, March 22nd, 1879.

MY DEAR SIR,—The "Award" of the Arbitrators appointed to adjust the assets, liabilities, etc., of the Provinces of Ontario and Quebec, having been confirmed by the Privy Council, the Government of Ontario are particularly anxious that a settlement should be arrived at, as between this Province and the Dominion of Canada, and for that purposes pressed upon the late Finance Minister the necessity of a final adjustment of the accounts.

It was the intention on the part of the late Government to take up that question immediately after the elections. Subsequent to the elections I wrote to Mr. Courtney, who informed me that it would be impossible, owing to your absence in England, and your time being wholly taken up preparing for the coming session, to go into the matter until after the session, since which I have not pressed it upon your attention. There are, however, certain items, which might be provided for in advance of the settlement, as they may require a vote of Parliament—I refer to the $124,585.18 as being part of the Common School Fund collected between the 6th March, 1861, and the 1st July, 1867, on account of lands sold between the 14th June, 1853, and the 6th March, 1861, which the Award determines as belonging to this Province—I find upon reference to the correspondence had between the Treasurer of Ontario (the Hon. E. B. Wood), in 1870, and the Finance Minister at Ottawa (the Hon. Sir Francis Hincks), that the Hon. E. B. Wood says:

"You will recollect the discussions we have had on this Fund, and the conclusion to which you informed me your Government had come, that inasmuch as the Arbitrators in dealing with the Common School Fund would necessarily have to decide on to the allowance or disallowance to the Upper Canada Land Improvement Fund, of one-fourth of the receipts from Common School lands, paid between the 6th March, 1861, and 1st July, 1867, on school lands sold between 14th June, 1853, and 6th March, 1861, your Government would be bound by and follow that decision in respect of one-fifth of the receipt from Crown lands, sold and paid during the respective periods above mentioned, and you informed me that an Order in Council to that effect had been passed. The Arbitrators have decided that one-fourth of the proceeds of the Common School lands shall be added to the Improvement Fund. Therefore your Government are bound by its solemn promise to add to the same fund one-fifth of the proceeds of the Crown lands."

I find that one-fifth of the proceeds of the Crown lands received between the 6th March, 1861, and 1st July, 1867, on account of lands sold between the 14th June, 1853, and 6th March, 1861, is $101,771.68.

There are many other items which will require to be adjusted, and any balance found on the one side or the other can be settled after authority is received at the next meeting of Parliament, but I need hardly say to you that the Land Improvement Fund is payable to the different townships, and that they are pressing for payment.

The Government of Ontario are simply the agents through whose hands the money will pass, as when it is received from the Dominion it will be immediately paid over to the different Municipalities entitled to it.

The two amouuts of $124,685.18 being one-fourth of the School lands, and $101,771.68, being one-fifth of the Crown lands, make up a total of $226,456.86, and as I am in constant communication with the representatives of the various Municipalities entitled to receive these funds, I shall be pleased to learn of your intention with reference thereto, and as to whether you propose to take a vote in the supplementary estimates to enable you to make an early payment of these sums.

I am, my dear Sir,
Very truly yours,

(Signed) S. C. WOOD,
Treasurer.

Hon. S. L. Tilley,
Minister of Finance, Ottawa.

OTTAWA, 29th March, 1879.

MY DEAR SIR,—Mr. Tilley has handed to me your letter of the 22nd instant, and I regret that pressure of work has prevented me from answering it earlier.

I will look up the whole matter, and if it is necessary to take a vote of Parliament for any amounts payable to the Provinces, I will suggest to Mr. Tilley that such amounts shall be inserted in the Supplementary Estimates.

I still trust that soon after the close of the session the accounts with the Provinces may be adjusted.

Yours very truly,

J. M. COURTNEY.

HON. S. C. WOOD,
Toronto.

(Ontario Sessional Papers, 1885, No. 45, page 6.)

MR. COURTNEY, DEPUTY MINISTER OF FINANCE, TO THE HONOURABLE A. M. ROSS, TREASURER OF ONTARIO.

OTTAWA, May 8th, 1884.

SIR,—I have now the pleasure of answering your letters of the 4th and 20th February last, asking for explanations of certain items in the accounts of the late Province of Canada with the Dominion.

* * * * * * *

4th. With reference to the amount to be credited for the Land Improvement Fund, I have to state that if you will be good enough to turn to page 121 of the accounts sent you, you will find that the Province of Ontario is credited with the amount of $124,685.18, that being the amount to be credited to the Province under sections 7 and 10 of the award, which amount I find by page 26 of Mr. Wood's Financial Statement for 1882, was one-fourth part of the collections on account of the Common School lands, sold between the 14th June, 1853, and the 6th March, 1861, after deducting 20 per cent cost of management.

These are all the questions you have asked, and if you desire any further information I shall be happy to give it, and I am now ready at any time you may choose to arrange with the Treasurer of Quebec to go into the whole of the accounts with a view to their settlement.

I have the honour to be, Sir,
Your obedient servant,

J. M. COURTNEY,
Deputy Minister of Finance.

HON. A. M. ROSS,
Treasurer of Ontario,
Toronto, Ont.

(Ontario Sessional Papers, 1885, No. 45, page 11.)

THE HONOURABLE A. M. ROSS, PROVINCIAL TREASURER, TO MR. COURTNEY, DEPUTY FINANCE MINISTER.

TORONTO, June 4th, 1884.

SIR,—I beg to acknowledge receipt of your letter of 8th ultimo, with statements from the Deputy Superintendent-General of Indian Affairs, in regard to the charges made against the late Province of Canada for annuities to Indians under the Robinson Treaties, and also containing your explanations *Re* U. C. Land Improvement Fund.

* * * * * * *

With regard to the Land Improvement Fund I am aware that you have given credit for the $124,685, which the award provides shall be credited to Ontario as being the amount payable to this Province on account of collections from the Common School Lands, but my enquiry, 20th February, was as to the Land Improvement Fund on Crown Lands.

By 16th Victoria, cap. 159, sec. 14, passed June 4th, 1853, the Governor-in-Council was authorized to reserve one-fourth of the proceeds of School Lands, and one-fifth of the proceeds of Crown Lands, to be expended in public improvement within the municipalities in which the lands were situated.

On the 7th December, 1855, Orders-in-Council were passed setting apart these proportions of the collections as the Land Improvement Fund. On the 6th March, 1861, an Order-in-Council was passed rescinding the order of the 7th December, 1855, but all sales of land made between these dates, namely, June 14th, 1853 and 6th March, 1861, were subject to the reservation for this fund, and the claims of the municipalities to expenditure of this fund for improvement, has, by various Orders-in-Council been recognized. The one-fourth and one-fifth of the collections made from these lands from 1853 to 6th March, 1861, were paid to the municipalities, but from the latter date to the 1st July, 1867, no payments were made, but the whole proceeds of the Crown Lands sold were absorbed in the Consolidated Revenue, and the whole proceeds of the Common School Lands credited to the Common School Fund. The statements submitted to the arbitrators shewed the Upper Canada Land Improvement Fund to consist of one-fourth of receipts from Common School Lands sold during the existence of Upper Canada Improvement Fund from the day of the abolition of that fund to 1st July, 1867.

Less cost of collection		$124,685 18
One-fifth of receipts from Crown Lands sold and money so received		101,771 68
Upper Canada Improvement Fund prior to abolition of Order-in-Council of 6th March, 1861	$5,180 04	
Less receipt in former years reserved	60 96	
		5,119 08
		$231,575 94

This fund was by section 5, number 6 of the Award, declared to be the property of Ontario.

The $124,685 is not mentioned in the Award as the amount of the fund, but that sum is directed to be deducted from the Common School Fund, in which Quebec was interested, and placed to the credit of the Upper Canada Improvement Fund, which was to be solely the property of Ontario. I claim, therefore, that Ontario should get credit for $231,575.94 as the amount of that fund, instead of only $124,685.18, which is credited.

The one-fourth of the School Lands was treated by the arbitrators as a debt due by the late Province to the municipalities, for which the faith of the Crown was pledged, and the one-fifth of the Crown Lands is exactly of the same character. The rule governing the one must govern the other also.

Now that the session of the Legislature is drawing to a close, I will write the Treasurer of Quebec and endeavour to arrange an early day to meet with you for a settlement of these accounts.

I have, etc.,

A. M. ROSS,
Treasurer, Ontario.

MEMORANDUM

Of meetings held at Ottawa, Tuesday, October 21st, and Wednesday, October 22nd, 1884, between the Treasurers of Ontario and Quebec, and the Minister of Finance of the Dominion of Canada, for the purpose of settling the outstanding accounts between the Provinces of Ontario and Quebec, the late Province of Canada, and the Dominion of Canada.

FINANCE DEPARTMENT, OTTAWA,
TUESDAY, October 21st, 1884.
(11 a.m.)

A meeting of the Honourable the Minister of Finance and the Honourable the Treasurers of Ontario and Quebec took place to-day, according to agreement.

Present at the meeting:—

Hon. Sir Leonard Tilley, C.B., K.C.M.G., Minister of Finance of the Dominion of Canada.
Hon. A. M. Ross, Treasurer of Ontario.
Hon. J. G. Robertson, Treasurer of Quebec.
J. M. Courtney, Esq., Deputy Minister of Finance of Canada.
H. F. Machin, Esq., Assistant Treasurer of Quebec.
C. H. Sproule, Esq., Auditor of Ontario.
B. Vankoughnet, Esq., Deputy of the Superintendent-General of Indian Affairs for the Dominion of Canada.

Statement by Mr. Courtney.

Mr. Courtney stated that he had heard from Ontario with regard to the accounts, but that he had heard nothing from Quebec. With regard to Ontario, there appeared to be two questions raised, viz.:—1st, the charges made by the Indian Department for annuities to Indians under the Robinson Treaty; and

2nd, the Upper Canada Improvement Fund. With reference to the latter point, Ontario claimed that this fund consisted of one-fourth of receipts from Common School Lands sold during the existence of Upper Canada Improvement Fund, from the day of the abolition of the fund to 1st July, 1867 :—

Less cost of collection		$124,685 18
One-fifth of receipts from Crown Lands so sold and money so received		101,771 68
Upper Canada Improvement Fund, prior to abolition by O. C. 6th March, 1861	$5,180 04	
Less receipt in former year reversed. ...	69 96	
		5,119 08
Total		$231,575 94

The first item, $124,685.18, has been credited in the accounts to the Province of Ontario, in accordance with the provisions of section 7 of the Award of the Arbitrators, and Ontario now claims that that Province should get credit for $231,575.94 as the amount of the Upper Canada Improvement Fund, instead of only $124,685.18. He (Hr. Courtney) had made enquiries into the item of $5,119.08, and found, as he had already advised the Treasurer of Ontario by letter, that that amount was made up by payments to various municipalities, a list of which had been furnished the Treasurer of Ontario, and by the sum of $1,913.17, which had been credited to the Province of Ontario as a balance for Colonization Roads.

With regard to the other item, $101,771.68, he found that this amount was included in the accounts submitted to the Arbitrators, together with the other items just mentioned as forming the Upper Canada Improvement Fund (*vide* page 70 of the Record of Proceedings) and was, he presumed, included in the case submitted to the Privy Council, that the Arbitrators had not definitely included this specific item in their Award, but as the same had been presented to them, and as by section 5 of the Award they awarded to Ontario amongst other trust funds the Upper Canada Improvement Fund, and as there would be nothing to go to the credit of that fund except the amount to be got from the Crown Lands, and as it appeared from Mr. Langton's reports (extracts from which are herein quoted) that the amount from Crown Lands was exactly on all fours with the amount from the School Lands, it would seem more than likely that the Arbitrators had awarded this sum of $101,771.68 to Ontario, in which case the amount would have to be added to the debt of the Province of Canada. He had, however, hesitated to place the amount at the debit of the Province of Canada and credit of Ontario for the reason that, on looking at the old correspondence. he had found that it was a ground of difference between the Treasurer of Ontario and Quebec before the Arbitration was settled, and as the then Treasurer of Quebec, who is the present Treasurer, had written to the then Finance Minister, Sir Francis Hincks, on the subject, he thought it better under all the circumstances to waive the charge for the present until the present Treasurer had had an opportunity of looking into the matter and letting him know later on, which he had since promised to do.

Mr. Courtney further stated that for convenience of reference he had thought better to engage Mr. Treadwell of his Department to take notes of the conversations had, so that a report of the proceedings could be obtained as a basis to go upon.

Extracts from Mr. Langton's Report Book, referred to by Mr. Courtney.

The Improvement Fund Ontario claims that as long as the Fund remained in force all lands were sold with a pledge that the money received on them should be expended in part for roads All the money actually received during the existence of this fund was so expended, but Ontario claims that all arrears upon lands *sold* during that period although the money was not *paid* until afterwards, was similarly liable. The whole amount received by the Province between the abrogation of the Fund and 30th June 1867, on account of Crown Lands sold during the existence of the Fund is stated to be..... $636,072 97
Less 20 per cent. for cost of collection..... 127,214 50

$508,858 38

One-fifth thereof appropriated to Improvement Fund, $101,771.69. This Ontario claims to be an addition to the debt, and payable to Ontario.

Besides this amount, there is a similar amount on account of Common School Lands, amounting to $124,635.18 which makes no change in the debt, as, if the claim is granted, is is taken from the Common School Fund to be added to the Improvement Fund. As this does not affect the amount of the debt, it is more properly a question for the Arbitrators than for the Dominion Government, but the fact can hardly be left out of account in deciding the former question, as, the principle being admitted, it would involve a further sum to be paid to Ontario before the Common School Fund is divided between the two Provinces.

The argument of Quebec against this claim rests upon the wording of the Act and of the Order in Council establishing the Fund. The Act provides that the *proceeds* of the lands shall be appropriated, and the Order in Council* also speaks of the *proceeds*. Quebec claims that nothing but what had been *realized* during the existence of the Fund should be so appropriated.

Extract No. 2.

I should have very little doubt that the claim for the Improvement Fund was a liability of the late Province, being an engagement to the settlers that a certain portion of the purchase money of the lands sold whilst the Fund was in existence was to be expended for their benefits on roads, were it not that an opposite view of its liability was twice taken by the Government of the day with regard to this Fund: first, when the Fund was supposed to have been abolished by Mr. Vankoughnet's Land Act, and, secondly, abolished by Order in Council. Upon both of these occasions the further payment was stopped upon all moneys *received* after the Fund was abolished, although they might have accrued upon lands sold during the existence of the Fund. There is, however, a further difficulty in settling this question. Whatever principle is applied to the Crown Lands, the same will apply to the Common School Lands. But the claim, if granted on account of the Crown Lands, would affect the amount of the debt, but not its apportionment between Ontario and Quebec, and will thus be a matter solely affecting the Dominion. But with regard to the School Lands it would not affect the amount of the debt in any way, but would affect the apportionment of the debt and assets between the Provinces, and would thus be a matter solely within the jurisdiction of the Arbitrators. It appears to me that in this way a conflict of decisions might arise between the two which might

*Order in Council, 7th December, 1855, Appendix 25.

be very inconvenient. I would therefore suggest that the decision as to the principle involved be left to the Arbitrators, and if they admit the claim of Ontario, to be authorized to add————to the amount of the debt as reported to them as exclusive of this claim.

Extract No 3.

You already understand the principle upon which Mr. Wood bases his claim for the Improvement Fund. There is a great deal of force in the argument, but it should not be lost sight of that the Government of the late Province of Canada did in effect twice decide against the claim now brought. In 1860 an Act was passed which was intended to repeal the clauses which established the Improvement Fund, and from the date of that Act all further apportionment of the receipts towards the Improvement Fund was stopped. It was afterwards discovered that the repealing Act had quoted the old Land Act repealed by its title in the Consolidated Statutes, whilst in that compilation the clauses establishing the Improvement Fund had been inserted in another Act which remained in force. An Order in Council was then passed, in March, 1361, abolishing the Fund, and at the same time a fresh distribution was ordered of the proportion of the receipts from the date when the former distribution had been stopped to that of the Order in Council, finally abolishing the Fund. In both these cases, therefore, the Government of the day were guided by the date at which the payments on the land were received, and not by the date at which the sales were made.

Mr. Wood states that an Order in Council was passed referring the question to the decision of the Arbitrators, or at least you led him to believe that such an Order had been passed. Such, however, was not the case. I suggested this course in a report to you upon the subject, and I understood you to take a favourable view of my suggestion, but there was no action of the Government in the matter. I still think that if Quebec had been properly represented in the Arbitration, this would have been the best way of meeting the difficulty ; but it is impossible to close our eyes to the fact that no arbitrator from Quebec was present when this question of great importance to it was decided. I express no opinion as to the affect which the absence of the Quebec arbitrator may have upon the validity of an Award in matters which, by the Act, were submitted to the Arbitrators, but I cannot think that the Government of the Dominion can be bound by the decision, arrived at without the privity of Quebec, in a matter over which the Arbitrators would chiefly have had no jurisdiction, unless the Dominion authorities had, as was proposed, specially referred the subject to them. I think that, as matters now stand, this question must be decided on its merits, irrespective of the decision the Arbitrators have come to in the analogous case ; and in arriving at that decision, interpretation twice put on the Statutes by Governments of the Province of Canada, and the fact that the object of the Fund was for local improvements in Ontario, cannot be left out of account.

The amount claimed is $106,771.68. I have no means of verifying the figures, but assuming the returns of the Crown Lands Department to be correct, this amount would have to be added to the debt.

UPPER CANADA LAND IMPROVEMENT FUND.

This, it was agreed, should stand over until Hon. Mr. Robertson had had an opportunity of consulting his colleagues with reference thereto.

OTTAWA, 31st March, 1885.

MY DEAR SIR,—Now that your Legislature has been prorogued I deem it advisable to direct your attention to the Budget Speech of Mr. Robertson, the Treasurer of Quebec, as reported in the Montreal *Gazette*, of the 24th instant. Mr. Robertson, in talking of the settlements of the accounts, referring to the Land Improvement Fund, stated that the question being a legal one he had referred it to the Attorney-General of his Province—subsequently he mentioned I presume, in connection with this subject: "I have within a few days received from Judge Caroult, the factum of Quebec, presented by our solicitor before the arbitrators, and certain memoranda which I have not yet had time to consult and which I have no doubt will prove very useful to whoever has further negotiations on these questions." I know what it is to do with during the session, but I think it would be as well if you could expedite Quebec respecting the Improvement Fund, there are many reasons why this should be done, the chief of which is that it is more than likely that I may have to leave for England on public business very shortly.

Yours very truly,

J. M. COURTNEY

Hon. A. M. Ross
Toronto.

TORONTO, 10th April, 1885

Hon. J. E. ROBERTSON, M.P.P.,
Provincial Treasurer,
Quebec.

DEAR SIR,—I have received a letter from Mr. Courtney urging a speedy meeting in reference to the settlement of the accounts, and he says that he will shortly have to go to England. I wrote him that I supposed it would be useless to ask you to meet us at Ottawa until after the close of your session. If, however, you could spare the time, I should be happy to meet you now at any time that would be convenient to you. If Mr. Courtney leaves for England, I presume we could do nothing until his return; so that anything could be done before he leaves, it would be very desirable. Can you yet inform what position you take on Land Improvement Fund? If we cannot arrive at any agreement that it is a charge upon the Province of Canada. How would it do to state a case and submit it for the opinion of Court?

I am, dear Sir,
Yours truly,

A. M. ROSS,
Provincial Treasurer.

TORONTO, Sept. 1st, 1885.

Hon. J. G. ROBERTSON, M.P.P.,
Provincial Treasurer,
Quebec.

DEAR SIR,— * * * I have not yet received any intimation from you as to your decision in regard to the Land Improvement Fund on Crown Lands. I shall be obliged for information as to the position you intend to take in regard to that item. I am continually being urged by the municipalities interested for a settlement of this matter, and am most anxious that it be finally settled as speedily as possible. Please advise me on this subject.

I am, dear Sir,
Yours truly,

A. M. ROSS,
Provincial Treasurer.

QUEBEC, 3rd September, 1885.

Hon. A. M. ROSS,
Provincial Treasurer,
Ontario, Toronto.

MY DEAR SIR,—In answer to your favour of the 1st instant, let me say that the Law Offices of Quebec have not yet completed their examination of the Upper Canada Land Improvement Fund question, but I will urge the matter as fast as possible.

I fail to see any force in the pretensions of the Dominion officials that they cannot make a re-cast of the accounts without a decision on the part of Quebec as to the Land Improvement Fund, this question can be laid aside for the present and accounts made up irrespective of it and dealt with at some future time. * * *

I am as anxious as you can be to arrive at some satisfactory settlements of all outstanding and open accounts between the Dominion and us. I shall do my utmost to bring about such settlement as soon as practicable.

I am, dear Sir,
Yours truly,

J. G. ROBERTSON.

TORONTO, September, 8th, 1885.

J. M. COURTNEY, Esq.,
Deputy Finance Minister,
Ottawa.

DEAR SIR,—On receipt of your letter of the 29th ult., I at once wrote the Treasurer of Quebec, informing him that I was advised that the re-cast of the accounts promised us in October last was delayed in consequence of his Department not having furnished the Department at Ottawa with certain information

asked, and urging him to hasten the despatch of any information necessary. From this reply, I am led to assume that the information asked from him is the acquiescence of Quebec in Ontario being credited with the Land Improvement Fund on Crown Lands. Mr. Robertson states that the law offices of Quebec have not yet completed their examination of the Upper Canada Land Improvement Fund, but promises to urge the matter as far as possible, but as such action may be delayed, I would again urge that in the re-casts of the accounts this fund should be credited to Ontario, leaving Quebec to take exception to it if, upon consideration of the Provincial Law Offices, Mr. Robertson should be advised to dispute it, as an asset of Ontario. I think the statement of the claim of the municipalities given in my letter of the 4th June, 1884, makes out, to say the least, a *prima facie* case in favour of Ontario. The inclusion of this in the assets will not in any way prejudice Quebec, as I suppose it is fully understood that the Provinces have the right to object to the correctness of any item therein. * * *

I am, dear Sir,
Yours truly,

A. M. ROSS,
Provincial Treasurer.

TORONTO, 17th December, 1885.

Hon. J. G. ROBERTSON, M.P.P.,
Provincial Treasurer,
Quebec.

DEAR SIR,—May I again ask what decision you have come to as to the attitude Quebec takes as to Ontario's claim, to be credited with the Land Improvement Fund on Crown Lands. The municipalities interested are urgently pressing their demands for the amounts which they claim are due to them. If Quebec acquiesces in the justness of this being credited to Ontario in the Dominion accounts the Ontario Government would be in a position to satisfy the demands of the municipalities. If, on the other hand, Quebec decides to dispute the credit then immediate steps should be taken to arrive at an authoritative decision. Surely it is time that we now came to a settlement of this matter. Please let me know what Quebec decides to do.

I am, dear Sir,
Yours truly,

A. M. ROSS,
Provincial Treasurer.

TORONTO, 18th December, 1885.

J. M. COURTNEY, Esq.,
Deputy Finance Minister,
Ottawa.

MY DEAR SIR,—I have from week to week been expecting the promised re-cast of the accounts. * * *

I have not heard anything further from Mr. Robertson in regard to the Land Improvement Fund. But hope that you have acted on my suggestion, and in the re-cast credited it to this Province, leaving Quebec to take exception to the credit if they so decide.

I am really very anxious to make some progress towards a settlement.

I am, dear Sir,
Yours truly,

A. M. ROSS,
Provincial Treasurer.

TREASURY DEPARTMENT, ONTARIO,
TORONTO, 17th June, 1886.

Honourable J. E. ROBERTSON,
Provincial Treasurer,
Quebec.

MY DEAR SIR,—I wrote Mr. Courtney a few days ago, asking when we would likely have a meeting in regard to the settlements of accounts. * * * Can you yet inform me what position you have concluded to take on the Land Improvement Fund on Crown Lands? This is a matter that does not affect the Dominion, and although it appears we cannot make any immediate progress with the other matters until Mr. Courtney's return, I trust we will in the meantime arrive at a settlement of this item. Kindly let me know what position Quebec has decided to take on it.

I am, dear Sir,
Yours truly,

A. M. ROSS,
Provincial Treasurer.

TREASURY DEPARTMENT, ONTARIO,
TORONTO, 17th June, 1886.

J. M. COURTNEY, Esq.,
Deputy Finance Minister,
Ottawa.

SIR,— * * * I have not received any reply to my application of 30th April for the payment of $124,685.18, Land Improvement Fund on School Lands, The Province has advanced this to the municipalities. Will you kindly send me a remittance of the amount.

I am, dear Sir,
Your obedient servant,

A. M. ROSS,
Provincial Treasurer.

QUEBEC, 19th June, 1886.

The Honourable A. M. Ross,
Provincial Treasurer,
Toronto, Ont.

DEAR SIR,— * * * The Treasurer hopes, shortly, to be able to get the law officers to take up the question of the Land Improvement Fund. * *

Yours respectfully,

H. T. MACHIN,
Assistant Treasurer, P.Q.

TREASURY DEPARTMENT, ONTARIO,
TORONTO, 3rd July, 1886.

J. M. COURTNEY,
Deputy Finance Minister,
Ottawa.

DEAR SIR,—I am in receipt of our favour of the 29th ult., advising me that you have given instructions to have the account of the Upper Canada Improvement Fund made up and sent. Will you kindly send copies of the various Orders in Council passed in connection with this fund?

I note that you have arranged with the Auditor-General for the payment of widows' pensions due on 1st July, and for the purpose of the enquiry as to the liability of the Province for this fund, the Attorney-General desires me to ask you for copies of all reports and Orders-in-Council on the subject, which I will be glad to receive as early as possible.

I am, dear Sir,

A. M. ROSS,
Provincial Treasurer.

TORONTO, 2nd November, 1886.

Hon. J. G. ROBERTSON,
Provincial Treasurer,
Quebec.

DEAR SIR,— * * * I have not yet received any intimation from you in reply to my enquiries as to what position you have decided to take in regard to the Land Improvement Fund upon Crown lands. Will you kindly have this matter considered so as to enable us at the proposed meeting to arrive at some definite conclusion as to how this is to be dealt with, either by allowance to Ontario or by reference, upon statement of the case, to the decision of some legal tribunal.

I am, dear Sir,
Yours truly,

A. M. ROSS,
Provincial Treasurer.

QUEBEC, 6th November, 1886.

Honourable A. M. ROSS,
Provincial Treasurer,
Toronto.

DEAR SIR,— * * * The Honourable the Attorney-General has not, so far, been able to find time to consider and give an opinion upon the question of the Land Improvement Fund.

I have the honour to be, dear Sir,
Yours very truly,

H. T. MACHIN,
Assistant Treasurer, P.Q.

TORONTO, 15th January, 1887.

Hon. J. E. ROBERTSON, M.P.P.,
Provincial Treasurer,
Quebec.

DEAR SIR,— * * * May I again ask if you have come to any decision in regard to the Land Improvement Fund upon Crown Lands? The municipalities are very urgent for a settlement of this matter, and if there is no likelihood of your Government acquiescing in the amount being charged as a liability of the late Province, can we not arrange for a case to submit to the courts to have the question legally decided?

I am, dear Sir,
Yours truly,

A. M. ROSS,
Provincial Treasurer.

QUEBEC, 19th January, 1887.

The Honourable A. M. ROSS,
Provincial Treasurer,
Toronto, Ont.

DEAR SIR,— * * * I have not been able to obtain the opinion of our law officers with regard to the Land Improvement Fund. The elections have prevented this being done this summer.

I should fancy there would be little difficulty in arranging a case for a decision of some of our Courts, but must consult the Honourable Attorney-General on this point.

Yours truly,

J. G. ROBERTSON,
Treasurer, P.Q.

QUEBEC, July 4th, 1889.

J. M. COURTNEY, ESQ.,
Deputy Minister of Finance,
Ottawa.

DEAR SIR,—In reply to your letter of 23rd May, I beg to say that in the statement of the debt of the late Province of Canada as agreed to and sanctioned by the Honourable the Privy Council in 1870, the Upper Canada Improvement Fund is stated at an amount of $5,119.08; that previous to the sanctioning of this statement by the Privy Council, Ontario claimed that the Improvement Fund should be increased by $226,456.86, which amount should be added to the debt of the late Province of Canada; that on the 22nd January, 1870, the Honourable J. G. Robertson, then Treasurer of the Province of Quebec, protested against this pretension of Ontario, saying that the introduction of such pretensions not alluded to in the Conference at Montreal, would involve the reopening of the whole question as respected the surplus debt.

The views of Mr. Robertson were evidently accepted as correct by the Privy Council, as the Improvement Fund remained in the statement confirmed by them at the sum of $5,119.08, as originally prepared by the Auditor of the late Province of Canada.

The Arbitrators appointed by Ontario and the Dominion—the Arbitrator of the Province of Quebec having resigned—awarded the Upper Canada Improvement Fund to the Province of Ontario, and with reference to the disposition of it the Government of this Province has nothing whatever to do.

If it is proposed in submitting this question to the Supreme Court of Canada to reopen the question raised by Ontario respecting this Fund, and disposed of by the then Privy Council of the Dominion, the Government of this Province protests against the Government of the Dominion, sanctioning the submission of such a case to any Court.

The claim of the municipalities for one-fourth of the amount of the sales of school lands and one-fifth of the amount of the sales of Crown lands, made between the 14th June, 1853, and the 6th March, 1861, was twice decided against by the Government of the late Province of Canada, first when the Fund was supposed to have been abolished by Mr. VanKoughnet's Land Act of 1860, and secondly when it was actually abolished by Order in Council. The late Mr. Langton, Auditor of the late Province of Canada, in his report at the time of Confederation on this subject, says:—

"In 1860 an Act was passed which was intended to repeal the clauses which established the Improvement Fund, and from the date of that Act all further apportionment of the receipts towards the Improvement Fund was stopped."

"It was afterwards discovered that the repealing Act had quoted the old Land Act repealed by its title in the Consolidated Statutes, while in that compilation the clauses establishing the Improvement Fund had been inserted in another Act which remained in force. An Order in Council was then passed in March, 1861, abolishing the Fund, and at the same time a fresh distribution was ordered of the proportion of the receipts from the date when the former distribution had been stopped, to that of the Order in Council finally abolishing the Fund. In both cases the Government of the day were guided by the date at which the payments on the lands were received, and not by the date on which the sales were made."

A statement and recommendation submitted on the 17th September, 1863, to the Executive Council, by the then Commissioner of Crown Lands, sets forth that:—

"The said Fund has been regularly paid (with the exception of some few balances that remain to certain municipalities) down to the end of 1859, at which date the then Commissioner of Crown Lands considered it expedient to stop further payments to the Fund. With this view, he omitted on the amended Land Act, 1860, the clause authorizing the creation of the Fund, but in March, 1861, it was ascertained that the authority for the Fund existed at the date of the amended Land Act in the School Act, and not in the Land Act, as had been supposed. On the 6th March, 1861, an Order in Council was passed, rescinding that of 26th July, 1856.

"It appears to the undersigned that the Improvement Fund continued to accrue legally, and may be fairly claimed by the various municipalities of Canada West, down to the above date of March 6th, 1861, and he therefore respectfully recommends that the distribution thereof be made to them accordingly."

(Signed) WILLIAM McDOUGALL,
Commissioner.

The Arbitrators appointed by Ontario and the Dominion—the Arbitrator of the Province of Quebec having retired—treated the Common School Fund as an asset that they had power to divide and apportion in such manner as seemed to them right. They transferred to the Province of Ontario as belonging to the Upper Canada Improvement Fund, the amount of the sales of the Common School lands made between the 14th June, 1853, and the 6th March, 1861, including $124,685.18, stated to have been received on account of these sales between the 6th March, 1861, and the 30th June 1867. The Province of Quebec has always contended that the transfer of any portion of this asset to Ontario, excepting the amount to which Ontario was entitled in proportion to population, was unwarranted and unfair.

It should be borne in mind that the Arbitrators had no power whatever to change in any way the statement of the debts and assets of the late Province of Canada, as sanctioned by the Honourable the Privy Council, after the Conference held on the subject between the Dominion and the two Provinces. Therefore in the award that they made, while they unfairly, as Quebec contends, gave to Ontario a portion of the Common School Fund under the plea of transferring it to the Upper Canada Improvement Fund, they really had no power to increase the indebtedness of the late Province of Canada to the Upper Canada Improvement Fund, a fact which their silence on the subject of the claim of Ontario respecting the one-fifth of the Crown Lands sold, as above mentioned, shows that they themselves recognized.

The Government of this Province therefore declines to join in any way in the proposed litigation, or to make any changes or suggestions respecting the proposed case which has been submitted.

Yours truly,

(Signed) JOSEPH SHEHYN.

DEPARTMENT OF JUSTICE, CANADA,
OTTAWA, May 22nd, 1889.

DEAR MR. ROBINSON,

(Re Upper Canada Improvement Fund.)

I have seen Mr. Courtney, and he has written a letter to the Treasurer of Quebec, asking his Government to join in the argument and to make any suggestions as to the case which they may think right.

Could you be kind enough to have sent to me a dozen or so copies of the appendix to the case, and also a few more copies of the case itself.

I will keep you informed from time to time as to how the matter progresses.

Yours very truly,

(Signed) ROBERT SEDGEWICK.

C. ROBINSON, ESQ.,
C. E., *(sic.)* Toronto, Ont.

(Memorandum on Mr. Shehyn's letter of 4th July, 1889, to Mr. Courtney.)

Mr. Shehyn's point is, that "this pretension" of Ontario, namely, the addition of $226,456.86 to the Upper Canada Improvement Fund, was not "alluded to in the conference at Montreal."

"That Mr. Treasurer E. B. Wood's claim to such increase" when put forward was protested by Mr. Treasurer Robertson.

Mr. Shehyn refers, no doubt, to Mr. E. B. Wood's letter of 20th Nov., 1889 to Minister of Finance, setting forth the claim and the letter of 21st January, 1870. Mr. Treasurer Robertson to Mr. E. B. Wood, as also the letter of the same date, written by Mr. Treasurer Robertson to Mr. Wood, both of which letters, assert, that the claim not having been put forward at Montreal was excluded, and further adds that the Upper Canada Improvement Fund, under the statute and the Order in Council, "was to be composed not of the amounts due by the purchasers of the lands, but of those sums received by the Crown Lands Department from the purchasers during its existence."

Objecting to the claim because it was not brought forward at Montrea and secondly, raising the question of the propriety of its recognition, inasmuch as it was not a debt.

Thus discussing whether or not it is a debt to be included as part of the Upper Canada Improvement Fund.

I do not find that the proceedings at Montreal amounted to barring all claims not then specifically mentioned.

Nor that there was any discussion at Montreal which could affect the question involved, namely, that the amount applicable in respect of Crown Lands Sales (101,771.68) had not been credited to the Upper Canada Improvement Fund.

In order to consider the value of this view in opposition to Mr. Shehyn's assertion, I beg leave to direct attention to the following reference to Sessional Papers.

The minutes of the proceedings at the conference at Montreal, on 24th July, 1869, between the representatives of three Governments, the Arbitrators not being present, do not show that it was then agreed that every item not then prominently brought forward was to be forever excluded.

(See Ontario Sessional papers, 1879, No. 27, page 46.)

The result of that conference (see foot of page 47) was that if the minutes of conference were approved by the several Governments, a statement of the debt framed in accordance therewith should be prepared for submission to and the early action of the Arbitrators.

To this resolution I have to say, the three Governments did not approve of any statement finally.

On 31st August, 1869, the first meeting of Arbitrators. The record of the Arbitrators proceedings, note.

"The Honourable Sir John Rose, Minister of Finance of Canada, being present produced and filed with the Arbitrators copies of certain minutes of council in reference to the public debt of the late Province of Canada."

(Note, the documents so produced and filed were):

First, memorandum of informal conference at Montreal, 24th July, 1869.

Second, Order in Council, 17th August, 1869.

Third, statement of debt of the late Province of Canada. "The record of proceedings at page 16 then continues. The Treasurers of Ontario and Quebec, state that the above Orders in Council have not been formally acted upon by the respective Governments; but assent to the same being received, filed and considered *ad interim* under reserve of their right hereafter to communicate to the Arbitrators such action of their Governments as shall be taken in the premises."

E. B. Wood.
Christopher Dunkin.

At the second meeting of the Arbitrators, 2nd September, 1869, the Arbitrators ordered that Mr. Langton, the Auditor General of Canada should prepare:

First, a statement in detail by the Auditor General, of the assets enumerated in the fourth schedule of the B. N. A. Act, with such observations in explanation thereof, as he may think necessary.

Second. That the statement be communicated to the Treasurers of the two Provinces, and that they be called upon either to admit its correctness as enumerating the total assets to be divided under the Act, or to lay before the Arbitrators, in writing, such statements as may enable the Arbitrators to judge of its accuracy, and to add to or amend it if necessary.

(The statement of assets so prepared by Mr. Langton is to be found in Ontario Sessional Papers, 1869, No. 27, page 32; also Ontario Sessional Papers, 1873, No. 27, page 49.)

On 27th October, 1869, at the seventh meeting of the Arbitrators, the following order was made:

"The counsel for the Provinces of Quebec and Ontario shall prepare and print their respective cases, and communicate them to each other for such observation in response as they may deem necessary.

"The cases shall be communicated to the Arbitrators (together with an authoritive declaration by the Governments of Quebec and Ontario respectively, of their agreement with the Dominion Government in the matter of the amount of the debt of the Province of Canada,) on or before the 15th day of January next.'

On 29th October, 1869, Mr. E. B. Wood addressed Mr. Langton in relation to the Upper Canada Improvement Fund, enclosing Mr. Woods "revised statement" of the debt.

Page 17 of Appendix.

Also on 20th November, 1869, Mr. E. B. Wood addressed the Finance Minister on same subject.

Page 18 of Appendix.

And transmitted a copy of his "revised statement" to the Treasurer of Quebec.

Also on 12th January, 1870 Mr. E. B. Wood called the attention of the Minister of Finance to the determining "definitely the debt of the late Province of Canada," stating that the "Treasurer of Quebec had returned a statement differing from Mr. Wood's revised statement only in two items, viz., Canada Land and Emigration Company and Upper Canada Improvement Fund," which he left out altogether.

This letter is to be found in Canada Sessional Papers, 1870, No. 73, and it is important to show at that date, there had not been any action by the Dominion Government to limit the amount of debt of the late Province of Canada.

To this letter of 12th January, 1870, the Finance Minister replies on 20th January, 1870, to Treasurer E. B. Wood.

(*Canada Sessional Papers, 1870, No. 73.*)

"I am most anxious that the final adjustment of the debt should take place with as litttle delay as possible, but before I could take any further action in the matter it was desirable to ascertain whether the statement of the Quebec Government was in accordance with yours."

* * * * * * * * *

Besides the discrepancies between the Dominion and the two Provinces there are two items on which Quebec and Ontario differ, viz., the Improvement Fund $101,771.68 and the $12,928.37 being the amount to be expended by Ontario out of the payments made by the Canada Land and Emigration Company.

It would, I think, be desirable to have a final conference on all these points and on the final accounts to be rendered on behalf of the Dominion, prior to the time fixed for the Arbitration between Quebec and Ontario.

"I can only repeat that I am most anxious to come to a final settlement of the accounts"

The Treasurer of Quebec, also, at the same time wrote the Treasurer of Ontario the letter, set forth at page 24 of the appendix.

"That the Upper Canada Improvement Fund under the law and Order in Council was to be composed not of the amounts due by the purchasers of the lands, but of those received by the Crown Lands Department during its existence.

"The Receiver General under the Order in Council could set apart as therein directed, only the amounts which he had actually received.

"Independently of those considerations the introduction of such pretensions not allowed to in the conference at Montreal, would involve the reopening of the whole question as respects the surplus debt, which if once done, it is impossible to say where it might end."

"As I have before said if such question is reopened the whole ground may have to be gone over, when Quebec will claim the privilege of putting in claims for consideration in the discussion of the same."

NOTE.—The letters of 12th January, 1870, and of 20th January, 1870, above quoted and contained in Canada Sessional Papers, 1870, No. 73, are not printed in the Appendix; they throw no light on the general subject and are only important to refute Mr. Shehyn's preliminary objections. A copy of them is added hereto, the papers relating to Sessional Papers No. 73 not having been printed.

On 17th February, 1870, the ninth meeting of Arbitrators, the record states that the case of the two Provinces had been respectively interchanged and also sent to the Arbitrators as required by the order on 27th October, 1869, but that no statement had been furnished of any settlement by the Provinces with the Dominion Government as to the definite amount of the debt, as required by that order.

On examining the cases then laid before the Arbitrators (which are to be found in Ontario Sessional Papers, 1873, Number 27, from page 56 to 81 inclusive) it will be seen that Ontario at page 62 puts forward the details of the Upper Canada Improvement Fund and that at page 77 the answer given thereto by Quebec is as follows:

"The Funds as realized are to be expended under the direction of the Governors-in-Council, and an account of them laid before Parliament every year. This Fund was therefore under the immediate control of the executive, and was to be appropriated by it for works which it approved. Its destination is a public one; no one can recover it but the Government of either Province, and it will then form part of its general or consolidated fund."

The proposition, that because the specific particulars of the claim was not put forward at the conference at Montreal, therefore it was not submitted to the arbitrators, does not seem to be sustained, on the foregoing references.

It is not disputed by Mr. Shehyn that the appropriation of the Upper Canada Improvement Fund was before the arbitrators, but it would seem to be urged that it was limited to the amount of $5,119.08, and that the arbitrators could increase that sum.

The answer is;

That the amount to be appropriated "had to be determined."

Mr. Langton, it will be seen, directed attention to the Common School Funds as an item to be adjudged and not embraced in the 4th schedule, but made by Statute the joint property, in population proportion of Upper and Lower Canada.

And in dealing with and determining how that Fund had to be divided, arbitrators were bound to deal with the statutory charge in the whole, namely, the Improvement Fund one-fourth on the proceeds of School Land sales.

If, as a matter of legal construction, the arbitrators were right, then it follows that the municipalities have been hitherto deprived of one-fifth of the proceeds of Crown Land sales.

If the arbitrators were wrong, and that the legal construction did not warrant the receipt from sales made before the date of the rescinding Order in Council the opportunity for remonstrance has been lost.

The objection taken is the very point the Supreme Court is asked to decide

The further suggestion, that the claim is shut out because the total amount of debt of the late Province of Canada had been defined, does not seem to be supported by fact.

As this question seems to have been unsettled, *see Treasurer Wood* to *Finance Minister*, 12th January, 1870, *Finance Minister* to *Treasurer Wood*, 20th January, 1870, a copy of both of which letters are hereto annexed. *Treasurer Quebec* to *Treasurer Ontario*, 21st January, 1870. Page 24 of Appendix.

There does not .therefore, seem to be any reason to sustain Mr. Shehyn's objections, except by reiterating in answer the facts of the case, the main question being the arrangement of figures already in the Public Accounts, and by such re-arrangement increasing the Upper Canada Improvement Fund without, at the same time altering the collection of moneys which appear in the books of account.

The residue of Mr. Shehyn's letter is a statement of protest grounded on a reason, which is the question in dispute.

The object of obtaining the judgment of the Supreme Court of Canada on the case, is to determine the construction of the Order in Council which Mr Shehyn asserts with much force to be opposed to the contention of Ontario.

If Mr. Shehyn's views are sustained the contention will end, but it must not be overlooked that the Arbitrators were of opinion that the Order in Council did sustain the contention of the application of the amounts received from the sales of lands made, before the Order in Council was passed abolishing the further application of the proportions of the sales made to the Improvement fund.

Inasmuch as it was necessary as pointed out by the Auditor-General, Mr Langton, that the Arbitrators should deal with the Common School Fund in so far as to determine whether it should belong wholly to Ontario, or conjointly to Ontario and Quebec, and if between both, then in what proportions, that as a consequence they had to determine whether the School Fund before division was or was not liable to the diminution in favor of the Upper Canada Fund.

And it must be added that the same facts and conditions, Statutes and Order in Council which led them so to decide in respect of the Common School Fund, made the Crown land sales liable to a deduction in favor of the Improvement Fund.

It was beyond the power of the Arbitrators to do more than direct to which one of the two Provinces the Improvement Fund should belong.

If the Province of Canada had omitted to apply the required proportion to the credit of the Improvement Fund, in consequence of any misconception of the effect of the Order in Council, such ommission would not deprive the parties to whom the Improvement Fund belonged, from recourse against Canada, it being a debt due by the late Province of Canada.

Æ. I.

29th August, 1889

[Treasurer Ontario to Minister of Finance]

Treasury Department Ontario.
Toronto, January 12th, 1870.

Sir,—Referring to my letter to you of the 20th November last, I have again to call your attention to the determining definitely the debt of the late Province of Canada. Since the date of that letter I have communicated the "Revised statement of the debt" enclosed to you, to the Treasurer of Quebec, who in turn sent me a statement differing from mine only in two items, viz:—"Canada Land and Emigration Company ($12,928.37)" and "U. C. Improvement Fund" which he left out altogether.

I enclose copy of the correspondence. As to the first named item I shall not enter into any discussion, as the agreement made by the late Province with the C. L. & E. Company, is so clearly and unequivocally expressed as to admit of no argument. I refer you to the correspondence containing the terms and conditions of the agreement of the purchase and the payment of the purchase money by that company, comprised in a "Return" brought down to the Assembly of Ontario and to be found in the Ontario Sessional papers 1868-9, volume 1, part 3, No. 34, document No. 54, for confirmation of the ground I take. Already has Ontario been obliged to pay between $4,000 and $5,000 on this agreement.

In reference to the other item I may remark that I have delayed the discussion of it with the Treasurer of Quebec on the merits waiting for the printing of the Report of the Select Committee appointed by the Legislative Assembly of Ontario, to investigate and report the facts respecting the U. C. Improvement. I am only this day in possession of a printed copy of that report and now that I am able to put this report into your hands, I lose no time in calling your attention to this item in the public debt of the late Province of Canada, for the settlement of this item does, in fact, by the consent of all parties as I take it, definitely fix the debt.

I shall not offer any considerations in addition to those contained in my letter to you of the 20th November last, and the inevitable deductions and conclusions which apart altogether from the testimony of living witnesses, flow from the incontrovertible evidence of a series of solemn Orders in Council and uniform action of successive Governments as set forth in the Appropriation Acts and Public Accounts for a number of years and in the accompanying Report of the select Committee to which I have already referred. I content myself with simply calling your attention to my observations in my former letter on this subject, and bespeaking from you a careful perusal of the evidence documentary and otherwise and the conclusions of fact therefrom drawn, contained in the report of the select committee.

As the arbitration cannot be concluded without the question of the amount of debt being unalterably settled in some way, permit me to express the hope that you will, with as little delay as convenient, take such steps as will lead to its speedy termination.

Allow me to remind you that the meeting of the arbitrators is fixed for the first day of the next assembling of the Parliament of Canada.

I have, etc.

(Signed) E. B. WOOD.

The Hon. Sir Francis Hincks,
Minister of Finance, Ottawa.

[Minister of Finance to Treasurer Ontario.]

Finance Department Ottawa,
20th January, 1870.

Sir,—I have the honor to acknowledge the receipt of your letters of the 20th November, and the 12th instant, the former transmitting a "revised statement of the debt of the late Province of Canada," and the latter calling my attention "to the determining definitely the debt of the late Province of Canada."

I am most anxious that the final adjustment of the debt should take place with as little delay as possible, but before I could take any further action in the matter it was desirable to ascertain whether the statement of the Quebec Government was in accordance with yours.

I regret to find from a statement of their case forwarded by the legal advisers of the Quebec Government that claims have been advanced in contravention of the terms agreed upon at Montreal, and embodied in the statement officially furnished by the Treasurer of Quebec.

This has been one cause of delay which has taken place. As between the Dominion Government and the old Province of Canada you have been made aware that there are still items to be furnished, which I hope will in a few days be completed for which the late Province of Canada is liable.

On reference to the two statments furnished by Quebec and Ontario I find that there are but four items which have not yet been sanctioned by the Dominion Government, and which are claimed as deductions by both Ontario and Quebec. The first of these is the Cataraqui property ($6,584.54) which of course will be allowed; the second is the gratuities ($22,819.10) which, though in equity a charge against Canada, will not, I hope, be pressed by the Dominion; the third is hydraulic rents (101,784.44) which both Ontario and Quebec claim as a fair deduction at the full amount at which it stands in the books of the Province, without reference to the deductions claimed by the debtors.

It strikes me that the language of the resolution adopted at the Montreal Conference is in favor of the view taken by the Dominion, but as there will possibly be some matters to adjust after our final claim is sent in, this may be considered at the same time.

The other item is the roads and harbors ($202,377.63). This is a matter peculiarly affecting the Province of Ontario.

There is no reason why the Dominion should deduct their claims at their face, or at any more than they are worth, and they are worth more to Ontario than to the Dominion, as you have an opportunity of deducting from the municipalities any debt they may owe.

It would facilitate a settlement of this item if you could name an amount at which your Government would take over the claims.

Besides the discrepancies between the Dominion and the two Provinces there are two items on which Quebec and Ontario differ, viz., the Improvement Fund, $101,771.68, and the $12,928.37 being the amount to be expended by Ontario out of the payments made by the Canada Land and Emigration Company. It would, I think, be desirable to have a final conference on all these points, and on the final accounts to be rendered on behalf of the Dominion prior to the time fixed for the arbitration between Quebec and Ontario.

I can only repeat that I am most anxious to come to a final settlement of the accounts.

I have, etc.,

(Signed) F. HINCKS,
Minister of Finance.

The Hon. E. B. WOOD,
Treasurer of Ontario,
Toronto.

[TREASURER OF QUEBEC TO MINISTER OF FINANCE.]

TREASURY DEPARTMENT, QUEBEC,
21st JANUARY, 1870.

SIR,—I have the honor to enclose for your information my reply to the Hon. E. B. Wood, Treasurer of Ontario, respecting his statement of the surplus debt of Canada, dated Nov. 20th, 1869, which I hope will be found satisfactory, as showing that the statement heretofore sent by me of such surplus debt was correct.

It may be proper to remark here that the pretensions now put forth by Mr. Wood, not being urged at the Conference of the representatives of the three Governments in Montreal are inadmissable. Otherwise the whole question may have to be re-opened, as between the Dominion Government and the two Provinces respecting the surplus debt; a proceeding which would necessarily involve the discussion of all claims which might be put forth by either Province, of any description, thus rendering the proceedings agreed on at Montreal useless.

I have, etc.,

(Signed) J. G. ROBERTSON,
Treasurer, P.Q.

To the Hon. SIR FRANCIS HINCKS,
Minister of Finance,
Ottawa.

[ENCLOSURE WITH PREVIOUS LETTER.]

TREASURY DEPARTMENT, QUEBEC,
21st JANUARY, 1870.

SIR,—I have the honor to acknowledge the receipt of your letters of the 27th and 12th January instant, referring to the amounts which you pretend should be added to the statement of the debt of the Province of Canada, as due, one to the Canada Land and Emigration Company, and the other to the Upper Canada Improvement Fund, and also the report of the select committee on the Land Improvement Fund, and the Return to an address of the Leislative Assembly of Ontario, respecting the purchase of ten Townships *en bloc* by the Canada Land and Emigration Company.

A careful and attentive perusal of these documents as well as of Chapter 26 of the Consolidated Statutes of Canada leaves no doubt in my mind that the pretensions of Ontario are unfounded and inadmissable.

The claim of the Canada Land and Emigration Company is at least but a contingent one, the existence of which depends upon the construction of the roads and which moreover may be compensated by the forfeiture or extra price of 2-16 per acre, which the Company is bound to pay as a penalty for non-performance of settlement duties during the time specified.

If, owing to recent action of the Government of Ontario, it is found proper to discharge the Canada Land and Emigration Company as it demands by its petition of the 22nd August, 1868, from its obligation, the Province of Quebec cannot be called upon to contribute, which it would, if that sum was added to the debt of the Province of Canada. The whole under the British North American Act, 1867, passed with the Lands to Ontario, which is bound to meet the claim if any hereafter is made good and to enforce the execution of the contract or get the extra price stipulated as a penalty for its non-fulfillment.

As to the sum which you propose to add to the amount set down in the statement of affairs as due to the Upper Canada Improvement Fund, the Fund, under the law and the Order in Council was to be composed not of the amounts due by the purchasers of the Lands, but of those received by the Crown Lands Department during its existence.

The Receiver-General under the Order in Council could set apart as therein directed, only the amounts which he had actually received.

Independently of these considerations the introduction of such pretensions not alluded to in the Conference at Montreal, would involve the re-opening of the whole question as respects the surplus debt, which, if once done, it is impossible to say where it might end.

As I have before said, if such question is re-opened the whole ground may have to be gone over, when Quebec will claim the privilege of putting in claims for consideration in the discussion of the same.

I have, etc.,

(Signed) J. G. ROBERTSON,
Treasurer.

Hon. E. B. Wood.
Treasurer, Ont.

[Robinson to Irving.]

Bodega Chambers, Ottawa,
October, 29th, 1889.

My Dear Irving,—I saw Mr. Sedgewick this morning and found that a letter, of which they gave me the enclosed copy, had been sent to and had crossed me.

He says they intend to take the opinion of the Supreme Court, but are anxious to have Q. represented on the argument, and thinks that what they now suggest may affect it.

This, I suppose, would put off this matter until January, but I do not see that we can seriously object.

Yours truly,

(Signed) C. ROBINSON.

[SEDGEWICK TO ROBINSON.]

Re U. C. Improvement Fund.

OTTAWA, October 28th, 1889.

DEAR SIR,—Referring to your letter of the 11th instant, in reference to this matter, I have now to state that I am informed that there will be a meeting next month in Ottawa of the treasurers of the two Provinces, and that there can be no question but that a considerable number of questions in addition to to the one in this special matter will be referred to the Supreme Court for its opinion, and Sir John Thompson allows me to say that he will use his influence with the Provincial authorities of Quebec with a view to their being represented when the questions involved in this case come before the Supreme Court.

It seems to me that it is of so great importance that the Quebec Government should be represented before the Supreme Court that we should take all possible steps with a view to secure that end.

I would suggest therefore that this matter be allowed to stand until the meeting above referred to takes place.

Yours truly,

(Signed.) ROBERT SEDGEWICK.

C. ROBINSON, ESQ., Q. C.,
Toronto.

[IRVING TO ROBINSON.]

Re. U. C. Improvement Fund.

OSGOODE HALL, 30th October, 1889.

MY DEAR ROBINSON,—The delay suggested by Mr. Sedgewick practically amounts to another year of suspense.

The Townships case is so entirely different from other questions that they, (the Townships) will not acquiesce in the reasons for the postponement.

I wish you would again see Mr. Sedgewick and beg him to refer this case at once.

Most truly yours,

(Signed.) ÆMILIUS IRVING.

C. ROBINSON, ESQ., Q. C., etc.,
Bodega Chambers, Ottawa,

Re. U. C. Improvement Fund.

TORONTO, October 11, 1889.

DEAR SIR,—You will remember sending to me at Dalhousie in July last, some papers in this matter.

It appeared from them that the Deputy Minister of Finance had informed the Treasurer of Quebec that the Dominion Government intended to ask the advice of the Supreme Court upon the question and submitted the case proposed for their opinion, with a view to the approval of it on the part of Quebec, or the suggestion of any changes which they might think right.

In answer, the Treasurer, for reasons given by him at some length, declined to join in any way in what he termed "the proposed litigation," or to make any charges or suggestions respecting the case, and this answer was sent to you by the Assistant Deputy Minister of Finance, with a request for your instructions as to what reply, if any, should be given to it.

You asked me what I thought of the Treasurer's letter, and I answered, so far as I remember, that the reasons assigned by him might have weight with the Supreme Court as showing that the decision should be in favor of Quebec, but that they seemed to me to form no ground whatever for not submitting the case.

On my return I found from Mr. Irving that the treasurer's letter was also communicated to him by you and that his view entirely agrees with my own.

He has, however, taken pains to investigate the various arguments urged which I was unable to do at Dalhousie, and the documents to which he has referred lead him to the conclusion that they are not entitled to prevail, or are at least open to very great doubt. A memorandum prepared by him can be sent to you if desired.

I am not aware what answer has been given to the Treasurer of Quebec, but as the sittings of the Supreme Court are approaching and the matter is thought urgent here, I should be glad to know if the Dominion Government will submit the case as prepared.

I regret the course taken by Quebec, as I should much prefer their concurring in the preparation of the case and being represented on the argument, and their refusal seems to me rather to indicate want of confidence in their own views as they have presented them. Perhaps the Dominion Government under the circumstances, may think it right to appoint Counsel to appear for Quebec on the argument; if so, any information in my possession as to the facts will be at his service.

In any case the question seems to be one which must be settled by the Dominion Government, who have really no interest in the result, and my suggestion that they should take the opinion of the Court seemed and still seems to me the most reasonable and just mode for both parties of arriving at a disposition of the matter.

As to the other matter, the question as to the validity of an Ontario Statute about which you spoke to me, has anything further been done?

Yours truly,

C. ROBINSON.

ROBERT SEDGEWICK, ESQ., Q. C.

(Copy.)

[To the Honourable A. M., Ross.]

Toronto, Court House,
Tuesday, 7th January, 1890.

My Dear Sir,—I have prepared a statement of the law and the facts bearing on the Proton case. I enclose the statement and will be greatly obliged if you can find time for its perusal.

The items collected in 1857, 1858, 1859 and to 1861, set forth on page 7 of the statement, are not as you have already told me, part of either of the sums of $124,685 or of $101,771 which were presented to the arbitrators.

Because these sums before the arbitrators related to collections made after the appropriation had been stopped, by rescinding order of March, 1861.

The Proton claim in so far as the figures at page 7 applies, therefore, to claims for collection before the rescinding order was passed.

And the figures have not been supplied, but there may be items for collection after March, 1861, on sales in Proton prior thereto.

That is the same class of claim as that which the other townships claim under the award. The Proton claim is wholly dissimilar from the case of other municipalities, because the Proton claim in its chief feature is for a percentage, at a time when the other townships received their percentage in due course.

Proton may then have claimed and been refused, or may have omitted to claim.

And I do not understand that in the books of the old Province of Canada the collections were ever placed to the credit of the Land Improvement Fund, or to the credit of Proton.

There is no evidence that any sum was ever paid to Proton for Grammar School collections, but there may have been from Crown Land collections, (as Proton was composed of about 47,000 acres of Grammar School lands and two ranges only of Crown Lands.)

It would be interesting to know if the other Grammar School townships were ever paid anything out of the Grammar School sales. They are:

Houghton.	Southwold.
Middleton.	Westminster.
Bedford.	Blandford.
(Proton.)	Yarmouth.
Sheffield.	Seymour.

Very probably not. Because at the period when the Order in Council appropriated the allowance to the Improvement Fund, that no sales were being made in the above named townships.

The Crown Lands Department never treated Grammar School collections as "Common School collections"—deducting one-fourth less six per cent. for collecting—but treated them (the Grammar School Lands) as "Crown Lands," deducting one-fifth, after deducting twenty per cent. for collecting.

I am expecting to go down to Ottawa in a few days.

Mr. Robinson has arranged that as soon as he can (he now being at Ottawa) he will arrange that we should see Mr. Sedgewick.

I remain, my dear Sir,
Most truly yours,

(Signed.) Æ. IRVING.

CASE OF THE TOWNSHIP OF PROTON, IN THE COUNTY OF GREY.

This Township was selected as one, the lands in which were to form part of the grant by King George III. in support of Grammar Schools.

In a return of Grammar School lands in the Crown Lands Department, made by W. Chewitt, acting Surveyor-General, dated 13th April, 1827. The Township of Proton (then part of the Home District) appears as an "original appropriation"—4,700 acres.

Statute of late Province of Upper Canada, 2 Vic., ch. 10, section 2. "That it shall and may be lawful for the Lieutenant-Governor, by and with the advice of the Executive Council, to set apart two hundred and fifty thousand acres of the waste lands of the Crown in this Province, to be sold in like manner as other Crown Lands, at a price not less than ten shillings per acre, and the proceeds thereof paid into the hands of the Receiver-General from time to time, to be appropriated in such manner and for the Grammar Schools as hereinbefore provided."

By the 2 Vic., ch. 10, and the 4 and 5 Vic., c. 19, the proceeds of the sales of Grammar School Lands were to be invested and the income divided among the several Districts for Grammar School purposes.

The Statute 2 Vic., ch. 10, did not affect the appropriations or selections for Grammar Schools made at an earlier date in pursuance of the King's grant, but defined or determined the quantity of land appropriated and available for Grammar Schools, as the King's grant had warranted a greater quantity, a considerable portion of which had been appropriated questionably to King's College and Upper Canada College.

The lands in the Township of Proton were opened for sale on 22nd December, 1856, (having been first advertised in the *Canada Gazette* on 22nd November, 1856).

The Township claims to be included in the Upper Canada Land Improvement Fund and to have an appropriation on that account by virtue of the statutory enactment 16 Victoria, ch. 159, sec. 14, and certain Orders in Council made in pursuance thereof.

The statute is as follows:

By a statute of the late Province of Canada passed in the 16th year of Her Majesty's reign, chaptered 159, entitled, "An Act to amend the law for the sale and the settlement of Public Lands," it is enacted by section 14: "It shall be lawful for the Governor in Council to reserve out of the proceeds of the School lands in any County a sum not exceeding one-fourth of such proceeds as a fund for public improvements within the County, to be expended under the direction of the Governor in Council; and also to reserve out of the proceeds of unappropriated Crown Lands in any County a sum not exceeding one-fifth as a fund for public improvements within the County, to be also expended under the direction of the Governor in Council."

The Order in Council made under that statute and in force when the Proton sales were first made is as follows:

A REPORT of a Committee of the Honourable the Executive Council of the late Province of Canada approved by His Excellency the Governor-General in Council on 28th July, 1856.

"In reference to the fund for public improvements formed under the 14 section of the Act, 16 Vic., ch. 159, the committee recommend that the funds derived from the sales of lands in each particular township or other municipality and

applicable to the purpose of this fund and not already apportioned be applied to the making, maintaining, altering or improving of the roads or bridges in each of these townships or other municipalities respectively, and be for this purpose distributed and disposed by and through the municipal council of each such township or other municipality, each such council to report to the Bureau of Agriculture the manner of expenditure of all such moneys on the first days of January and July in each year and at any intermediate time within ten days after having been called upon so to do by that department."

Books in the Crown Land Department were prepared in 1856, printed and used, with the heading

Road Improvement Fund.

"Statements of the amounts available for public improvements on the sale of Crown Grammar School and Crown Lands under 16 Vic., c. 159, sec. 14."

In the details of the sums composing the claim under the award as the particulars for each municipality, the Township of Proton does not appear under Common School head, but it does appear under Crown Land head for a very small sum, $66.15, for the year 1863.

Proton had lands which were known as Crown Lands as well as Grammar School Lands, and the sum of $66.15 is returned as available to the improvement fund on the Crown Land sales collected in 1863.

Lands in the Township of Proton were sold in the ordinary course and accounts kept showing one-fifth as available for the improvement fund, treating such lands as Crown Lands and not as School Lands, on the sales of which the statute directed one-fourth for public improvements.

On 30th October, 1858, by Order in Council, the Grammar School Lands were stopped contributing to the improvement fund. The order is as follows:

COPY of a Report of a Committee of the Honourable the Executive Council, approved by His Excellency the Governor-General in Council on the 30th October, 1858.

"On a report dated 16th April, 1857, from the Honourable the Minister of Agriculture, reporting that under the 14th section of the Act. 16 Vic., cap. 159, an Order in Council was passed appropriating one-fourth of the Grammar and Common School funds for public improvements within the townships whence the fund is derived. That the fund derived from the sales of School Lands to 31st of December, 1855, has been appropriated.

"That the amount arising from the sale of Common School Lands for 1856 is £5,883 11s. 5d., and that from Grammar School Lands for the same year only £766 14s. 9d. That the latter amount, when divided among the various townships from which it has been derived, will be of very inconsiderable value for public improvements, but would be of very great value in aiding Grammar Schools in various ways, for instance, in securing masters for classical schools—many applications for additional Grammar Schools have been made—and recommending that in future none of the proceeds of the sales of the Grammar School Lands in Upper Canada be diverted from the purpose for which they were originally intended, save the proportion of the sales to the 31st December, 1855, above alluded to. The committee recommend that the fund arising from Grammar School Lands be reserved as suggested by the Minister of Agriculture."

(Certified.) W. H. LEE,
C. E. C.

OBSERVATIONS ON THE ORDER OF OCTOBER 30TH, 1858.

It recites a report of 16th April, 1857, on which an Order in Council was passed (date of such order not given) appointing one-fourth of the Grammar and Common School Funds for public improvements within the townships whence the fund is derived.

Among all the papers and returns sent down to the Parliament of the late Province of Canada and to the Legislature of Ontario an Order in Council or Report of 16th April, 1857, is not to be found.

The Deputy Minister of Justice in December, 1889, states that there is no order of 16th April, 1857, but that there is an order of 16th April, 1858.

The order of April, 1858, is included among the Parliamentary Returns above described, and although it relates to appropriations from the Land Improvement Fund it does not appropriate one-fourth of the Grammar and Common School Funds, and the recital in that order omitting any reference to the Crown Lands suggests a want of care in drawing the order.

A reference to the original Reports and Orders in Council may clear up a possible error; meanwhile the order of 16th of April, 1858, is as follows:

COPY of a Report of a Committee of the Honourable the Executive Council, approved by His Excellency the Governor-General in Council on 16th April, 1858.

"On a memorandum dated the 8th April, 1858, from the Honourable the Minister of Agriculture, stating that by Order in Council of 11th of January, 1856, a sum of £800 was granted for the making of a road between Elma and Wallace on one side and Mornington and Maryborough on the other, in the County of Perth, such amount to be paid out of the Improvement Fund (16 Vic., cap. 159, sec. 14,) whenever funds might be availuable.

"That the funds available up to the 31st of December, 1855, in all the County of Perth amounted to £990 5s. 2d., all of which was accruing to the Township of Elma for sales of land therein, no other township having any Improvement Fund up to that date.

"That out of this sum of £990 5s. 2d. there had been expended (before the passing of the order granting to each township in its own share of the fund) the sum of £678 15s. 6d., leaving a balance of £311 9s. 8d. due to the said township of Elma up to the 31st of December, 1855.

"That Mr. Daly, M.P.P. for Perth, and the Reeves of Elma and Wallace now apply for the repeal of the order granting £800 from the fund for the road above mentioned, and that the fund be given by the Receiver-General to the townships to which it severally belongs as the balance of this £800 unexpended is not required for the performance of any existing contract.

"The Minister therefore recommends that the balance, being £311 9s. 8d., remaining due to Elma on the 31st December, 1855, be paid by the Receiver-General to that municipality upon receiving the required authority from the treasurer thereof, and that the division of the fund for 1856 for the County of Perth be in no way affected by the said order of 11th January, 1856.

"The committee submit the above suggestions to you Excellency's approval."

(Certified.) W. H. LEE,
C. E. C.

NOTE.—With reference to the Order in Council of 30th October, 1858, "whereby the fund arising from the Grammar School Lands be not diverted from the purpose for which they were originally intended, save the proportion of the sales to the 31st December, 1855, above alluded :

The Facts Are :

1. That on 31st December, 1855, sales in Proton had not been made.

2. That the Order in Council appropriating the statutory proportion of one-fourth of School Lands and one-fifth of unappropriated Crown Lands applicable to the purpose as a fund for public improvements within the county, "and not already apportioned, be applied to roads, etc., to be distributed and disposed of by and through the municipal council of each township." was passed on 28th July, 1856.

3. That on the 22nd December, 1856, sales of lands in Proton were first made.

4. That the return in Crown Land Books shewing the available sums from collections on sales of Lands made in Proton before March 1861, are as follows :

(Nothing in 1856 or prior thereto).

In 1857 Proton £1,722. 6s. 1d.	$6,889 22
In 1858 Proton	583 30
In 1859 and to March 1861— Land Improvement Fund abolished	69 72

5. That the figures above set forth are obtained by treating the sales from Proton Grammar School Lands, not as "School Lands subject to one-fourth deduction ; but as Crown Lands subject to one-fifth deduction."

(In proof of the above see Sessional Papers of 1856, Appendix No. 50).

Refer also to return in 1857. Third Session of 5th Parliament. "Grammar School Investment Fund."

And also Sessional Papers for 1857, No. 54, available sum for "Grey." $736.53 to 31st Dec., 1858.

Inquire—Does that include or omit Proton, and is one-fifth deducted in that return ?

The question raised, is whether Proton is entitled to claim under the Improvement Fund Act—one-fifth from Grammar School sales made after 22nd December, 1856.

And if so, whether the benefits are to be limited to the funds received up to 30th October, 1858, when the appropriation was stopped in respect of Grammar Schools.

And whether, notwithstanding the Order of 30th October, 1858, Proton can claim the proceeds collected after 30th Oct. 1858, in respect of Sales made between 22nd December, 1856, and 30th October, 1858.

In the two items composing the Upper Canada Improvement, submitted to the Arbitrators by the Honourable E. B. Wood on the part of Ontario—

From School Lands	$124,685 18
From Crown Lands	101,771 68

Which were the collections made on sales up to 6th March, 1861, and received by the late Province of Canada to 30th June, 1867.

The Township of Proton was not included as a claimant, an item might have been submitted for collections made after 28th October, 1858. on sales made between 22nd Dec., 1856 and 28th October, 1858.

But is alleged that Proton has never received any appropriation in respect of Grammar School Sales.

Therefore, the claim now is for proportions out of the years 1857, 1858, and subsequent collections on the sales made within those periods for appropriations which the Governor in Council never made.

And which, if Grammar School lands were within the definitions of 16 Vic. c. 159, s. 14—the Township of Proton can claim, on the ground that the settlers had been led to expect such appropriation.

On that point there is no evidence of any representations having been made.

The evidence in the printed return not being applicable to Proton sales.

The Statute applied to "School Lands" and upappropriated Crown Lands:—

Can the Grammar School Lands fall within either classification?

The Grammar School Lands which had been the subject of a grant by King George III, for special objects in respect of which engagements had been made, and in so far as the Township of Proton is affected, selected in 1827, or prior thereto, would seem to be appropriated Crown Lands, and not "unappropriated Crown Lands, made tributable to the Improvement Fund."

Nevertheless from sales of Grammar School Lands at a certain period, "one-fifth was reserved for improvements," being thereby treated as Crown Lands.

That the Grammar School Lands, were no part of Common School Lands, can be best answered by the report of Mr. Commissioner Cauchon in 1856.

Extract from Crown Lands Report, 1856. Hon. Joseph Cauchon Commissioner, page 7. ( ) School Lands.

The School Lands in Upper Canada are classed under two heads of account, viz; Grammar School and Common School Lands.

Of the 546,861½ acres originally set apart for the support of Grammar Schools, 225,944 acres were applied to the maintanence of King's College. and 66,000 acres to that of Upper Canada College.

"On the 31st December, 1855, there remained of Grammar School Lands "156,845½ acres. of which 2,340 acres were sold during 1856 for £1,906, 15s. "3d. leaving at the close of the year a remainder of 154,505½ acres."

"Of the million of acres of land in Upper Canada appropriated by the Act of "12th Vic. cap. 200, as a common fund for the maintenance of Public Schools, "there remained unsold, at the commencement of the year, 1856, 86,862¾ acres, "of which there were sold during the year 47.725 acres for £31,835 19s leaving "39,137¾ acres unsold."

"The gross amount received on account of Grammar School Lands during "1856 was £3,833, 13s, 11d, the net amount £3,332 10s 2d."

"The Gross amount received on account of Common School Lands was "£25,036 9s 6d, the net amount, after deducting charges of management, (con-"sisting of commission, costs of inspection and surveys,) and refunds being £22,-"324 14s 8d."

Although the Headings of the Books in the Crown Lands department refer to the "Road Improvement account," from Crown Grammar School and "Com-

mon School Lands," and that the Order in Council having been passed "appropriating one-fourth of the Grammar and Common School Funds for public improvements within the Townships whence the fund is derived."

And that it further appears that where Grammar School Funds were put to the road improvement, they were subject to a deduction of one-fifth and treated as Crown Lands.

The question remains whether Grammar School Lands were lands from which any portion of the proceeds of the sales thereof could be reserved for the Improvement Fund.

The Land Improvement Fund is based upon 16 Victoria, ch. 159, sec. 14.

"It shall be lawful for the Governor in Council to reserve out of the proceeds "of the School Lands in any county, a sum not exceeding one-fourth of such "proceeds, as a fund for Public Improvements within the county, to be expended "under the direction of the Governor in council, and also to reserve out of the "proceeds of unappropriated Crown Lands in any county; a sum not exceeding "one-fifth as a fund for public improvements within the county; to be also "expended under the direction of the Governor in Council."

16 Vic., c. 159, sec. 14, which created the Improvement Fund—added as a Proviso:—

"That not exceeding 6 per cent. on the amount collected, including surveys "shall be charged for the sale and management of lands forming the Common 'School Fund arising out of one million of acres of land set apart in the Huron "Tract"

The Upper Canada Grammar School fund being the proceeds of the sales of lands appropriated out of lands of the Province of Upper Canada, granted by the King—was in the nature of a Trust Estate.

(16 Vic. c. 186, s. 1.)

Consolidated Statute Upper Canada, c. 63, s. 4, 5 and 6. The Grammar School Lands at Confederation became the property of Ontario, but subject to the Trust for purpose for which those lands were set apart.

It was a vested interest and estate which would require very unequivocal language to sustain any Legislative intention to affect any change or diminish its value.

The Common School land appropriation 12, Vic. 200, stood on a different footing.

These one million of acres were set apart for educational purposes to be expended in both Lower and Upper Canada (in 1849) as a Common School fund.

These million acres were settled in Huron, Grey and Bruce.

Therefore reading the 12 Vic., c. 200, which appropriated the million acres for School purposes for Lower and Upper Canada, and reading the 16 Vic. c. 159, s. 14, creating the Upper Canada Improvement, when it was discovered that the whole million acres were selected out of the Huron tract, and reading also the Act of the same session relating to Grammar Schools, 16 Vic., c. 186, establishing the Grammar School Fund—"Out of moneys arising "from the sale of lands set apart or which may hereafter be set apart for the "encouragement of Grammar Schools in Upper Canada, etc"—it will be seen that there is nothing which tends to draw in Grammar School appropriation to the general term of school lands.

The Crown Lands Department seem to have been advised of this difficulty, as they applied the Grammar School collection as falling within the reservation prescribed for Crown Lands, deducting first 20 per cent. for management, and then deducting one-fifth for Improvement Fund.

Then arises the question how Grammar School Lands, so set apart by grant of George III, and appearing as such in Crown Land Books in 1827—can be treated as "unappropriated Crown Lands"—to bring them within the definition of the Statute 16 Vic., c. 159. sec. 14.

(*Supplementary.*)

27th January, 1890.

Enquiry was suggested by the Attorney-General to ascertain what sums (if any) had been deducted from the sales of Grammar School Lands and placed to credit of the Improvement Funds, and if so, whether paid over to the municipalities. The Crown Land Department are unable to furnish that detail.

I have therefore examined the Public Accounts and other Sessional Papers from 1854 forwards, and as the result of my searches, in so far as I am able to trace the appropriation of money to the Improvement Fund, there does not seem to be a record of any payment to the Grammar School Townships on account of Improvement Fund; but inferentially for two years, the Improvement Fund was credited with Grammar School sales. In 1858, I find that $12,997.53 was deducted from the Improvement Fund, being the proportion collected from Grammar School Lands in 1856 ..... $3,066 95
and in 1857 ..... 9,930 58

$12,997 53

This sum of $12,997 is placed at the credit of Grammar Schools Fund, with the following remark: "Improvement Fund of 1856 and 1857 formerly deducted."

The foregoing will be found by reference to Sessional Papers of 1859, Appendix No. 5, Public Accounts No. 37, Statement "of the Upper Canada Improvement Fund for 1855, '56, '57, '58;" also refer to Statement No. 38, same, Appendix, in statement of Educational Funds.

The collections in 1856 and subsequent years were not therefore paid to the municipalities.

Whether collections were made from Grammar School Lands in '54 and '55 I have not been able to discover, but if made and appropriated to the Improvement Fund, it does not follow that those appropriations would be paid to any Townships in which the lands were situated, because the Order in Council appropriating the collections to the respective Townships was not passed until 28th July, 1856; before that time the collections were applied to certain works of general interest, and not appropriated to the locality from which the collections were made.

Department of Justice, Canada,
Ottawa, October 30th, 1889.

My Dear Mr. Robinson.—I find that I was in error saying that a meeting of the Provincial Treasurers would be held here next month.

Mr. Courtney tells me that the Assistant Treasurer of Quebec will be here shortly, and that he and Mr. Foster intend proceeding to Toronto, to confer with the Treasurer there.

Mr. Courtney leads me to believe that when the Assistant Treasurer comes, we may be able to induce him to agree that his Government will become a party to the reference.

Yours faithfully,

(Signed) ROBERT SEDGEWICK.

C. ROBINSON, ESQ., Q. C.,
Toronto.

DEPARTMENT OF JUSTICE, CANADA,
OTTAWA, October 30th, 1889.

MY DEAR MR. ROBINSON,—I find that I was in error in saying that a meeting of the Provincial Treasurers will be held here next month.

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Yours faithfully,

(Signed) ROBERT SEDGEWICK,

C. ROBINSON, ESQ., Q. C.,
Toronto.

OSGOODE HALL,
31st October, 1889.

U. C. Improvement Fund.

MY DEAR MR. TREASURER,—Mr. Robinson went to Ottawa a few days ago. I begged him to call on Mr. Sedgewick,

I enclose Mr. Robinson's letter to me, enclosing a letter from Mr. Sedgewick.

And also a copy of my reply to Mr. Robinson's despatch last night,

I remain,
My dear Mr. Treasurer,
Most truly yours,

ÆMILIUS IRVING.

To the Honourable A. M. Ross

TORONTO, November 1st, 1889.

ÆMILIUS IRVING, ESQ., Q. C.,
Osgoode Hall.

MY DEAR IRVING,—I have yours of yesterday, with correspondence *re* Land Improvement Fund.

I have no knowledge of any arranged meeting of the Provincial Treasurers at Ottawa this month. Should such take place, and any questions for submission to the Supreme Court result therefrom, they will almost certainly be questions upon which the two Provinces, Quebec and Ontario, take common ground against the Dominion. The Land Improvement question is an issue purely between Quebec ann Ontario, in which the Dominion have no interest, and it is highly inexpedient to mix up this case with the other issues which the Provinces may have with the Dominion. The municipalities will be very much dissatisfied unless some immediate progress is made in regard to this matter. Please urge Mr. Robinson to press for an immediate submission.

I am,
My dear Irving,
Yours truly,

(Signed) A. M. ROSS.

OSGOODE HALL,
TORONTO, 6th November, 1889.

MY DEAR MR. TREASURER,—After Mr. Robinson had seen Mr. Sedgewick at Ottawa on the subject of bringing the Case of the Upper Canada Improvement to a hearing before the Supreme Court at an early day, he received a letter from Mr. Sedgewick, a copy of which I enclose.

I have had a discussion with Mr. Robinson since his return, and he does not think more can be said to Mr. Sedgewick than he has already said to him, and although I fully realize the strength of your determination to have a disposition of the Case made by the Supreme Court at an early day, I agree with Mr. Robinson that we must wait on Mr. Sedgewick's action (as representing Sir John Thompson) with the Quebec Executive.

I remain,
My dear Mr. Treasurer,
Most truly yours,

The Honourable A. M. Ross. ÆMILIUS IRVING.

TORONTO, 18th December, 1889.

Æ. IRVING, Esq., Q.C.,
Osgoode Hall.

MY DEAR IRVING,—Being in Montreal a few days ago I took occasion to discuss with Mr. Mercier, whom I met there, the attitude of Quebec on the Land Improvement Fund question, as I understood that Quebec's refusal to be a party to a suit, even as defendants, was the cause of delay on the part of the Dominion

in arranging the case on behalf of the municipalities. From the very emphatic and positive manner in which Mr. Mercier refused to take any part in the proposed suit, which he considered would be an opening up of the award, I am satisfied there is no use in the Dominion interposing any further delay with any hope of Quebec receding from its position, and I think you and Mr. Robinson should, without delay, press Mr. Sedgewick in the most urgent manner to have the case for the court settled at once, irrespective of Quebec's consent. Quebec would no doubt be notified of the case submitted or suit entered, and if the Executive of that Province declined to appear by counsel, the responsibility for such would rest upon themselves. The municipalities claim that they are deprived of moneys to which, under the award, they are entitled, and there must be a means of bringing their claims before the court for decision, irrespective of any consent or non-consent of Quebec.

I had an interview with Mr. Foster, the Finance Minister, on Monday, and informed him of Quebec's emphatic attitude, and pressed upon him the urgent necessity of a speedy arrangement of the case for trial. He said he would see Mr. Sedgewick on the subject, but Mr. Robinson should write him at once.

I am, my dear Irving,
Yours truly,

(Signed) A. M ROSS.

[*Copy.*]

TORONTO, 28th December, 1889.

ÆMILIUS IRVING, Esq., Q.C.,
Osgoode Hall.

MY DEAR IRVING,—I have received a communication from the Reeve of Proton in reference to their claim for Land Improvement Fund on Grammar School Lands.

I presume it is arranged that this question is to be decided when the other Land Improvement Fund cases are submitted. This must not be over looked. Has anything yet been done to fix the reference ?

I am, dear Sir,
Yours truly,

(Signed) A. M. ROSS.

OSGOODE HALL,
TORONTO, January 31st, 1890.

ROBERT SEDGEWICK, Esq.,
Deputy Minister of Justice,
Ottawa.

[*Re Upper Canada Improvement Fund.*]

DEAR SIR,—Referring to the occasion of our conversation here yesterday I have, in accordance with your suggestions, prepared, in so far as I am able, a draft order whereby the case may be referred to the Supreme Court.

I have examined the printed copy of the case, of which Mr. Robinson left many copies with you, having in mind your suggestions that it required questions to be framed for answering by the Court, and I find that the case is an entire statement of the proposition to be determined, and the only question for the opinion of the Court is on lines 34 and 35 of page 2.

I hope, therefore, that you will be able to have the case sent to the Supreme Court for determination with reference to the attitude of the Province of Ontario, on whose behalf I am acting. I beg leave to assure you that the Provincial Government is very solicitious for an early discussion of the case.

Mr. Robinson having placed the case before you on behalf of the municipalities, and understanding from him that it was desirable that the Province of Ontario should signify that it was deemed important by the Provincial Government that the case should go on, I am authorized to give you that assurance.

I remain, dear sir,
Yours most truly,

(Signed) ÆMILIUS IRVING.

[*Draft Submitted to Mr. Sedgewick in Letter 31st January, 1890.*]

On Memorandum, dated February, 1890.

From the Minister of Justice with reference to the question raised on section 7 of the Award made under section 142 of the B. N. A. Act, on the amount payable to the Province of Ontario for distribution among the municipalities entitled to participate in the Upper Canada Improvement Fund, recommending

(1) That the case annexed be referred to the Supreme Court of Canada for hearing and determination.

(2) That the Minister of Justice be given authority to have all steps necessary to obtaining an early discussion of the question so referred, the Committee concurring in the foregoing recommendation of the Minister of Justice.

Osgoode Hall,
25th February, 1890.

To the Honourable A. M. Ross,
Provincial Treasurer.

Sir,—I beg leave to forward to you herewith a copy of the case (dated 20th May, 1889) on the subject of the U. C. Land Improvement Fund and the appendix thereto, as lodged by Mr. Robinson as counsel for the municipalities, with the Deputy Minister of Justice on 21st May last.

I have written to Mr. Sedgewick that the Provincial Government is very solicitous for an early disposition of the case, and to assure him that the Provincial Government deems it important that the case should go on.

Mr. Robinson has recently returned from Ottawa, and he tells me that he has reason to believe that Mr. Sedgewick, the Deputy Minister of Justice, has determined to have the case referred to the Supreme Court, at the present or following sittings.

I have the honour to be, Sir,
Your obedient servant,

ÆMILIUS IRVING.

CASE.

20th May, 1889.

The Upper Canada Improvement Fund was formed by the 16 Vic. ch. 159 sec. 14, passed on the 14th of June, 1853, by which the Governor in Council was authorized to reserve out of the proceeds of School lands in any county, a sum not exceeding one-fourth, and out of the proceeds of unappropriated Crown Lands in any county, a sum not exceeding one-fifth of such proceeds, as a fund for public improvements within the county, to be expended under the direction of the Governor in Council.

This Fund existed and was expended for various improvements up to the 6th of March, 1861, having been directed by an Order in Council of the 28th July, 1856 (of which a copy is herewith submitted), to be distributed and disposed of by and through the Municipal Council of each township or other municipality.

On the 7th of December, 1855, and subsequently, by various Orders in Council (of which copies are herewith submitted) the expenditure of large sums from the Fund was approved of, and such expenditure was afterwards made.

On the 6th of March, 1861, by Order in Council (copy herewith submitted), the Order in Council of the 7th of December, 1855, authorizing the payment of the Improvement Fund created by the Land Act, 16 Vic. ch. 159, was rescinded, and no further payments to the Fund were made.

During the period between the 7th December, 1855 and 6th November, 1861, divers settlers and others made purchases of land and improvements thereon on the faith of the said Order in Council of 7th December, 1855, and otherwise dealt with the said lands on the faith of the said Order.

Up to the passing of the British North America Act, the late Province of Canada had not accounted to the municipalities for the sums that were claimed by them as their share of the collections made up to the 30th of June, 1867, from sales of land made between the 14th of June, 1853, when the Fund was created, and the 6th of March, 1861, when it ceased; but in 1863 the then Commissioner of Crown Lands, the Hon. William McDougall, reported in favour of their claim, and recommended a distribution of the Fund accordingly. (A copy of this report is submitted herewith.)

By the award made under sec. 142 of the B. N. A. Act, this Fund, under the name of "The Upper Canada Improvement Fund," was declared to be the property of Ontario for the purposes for which it was established.

It was represented by the Province of Ontario before the Arbitrators, that in dealing with the Common School Fund, and determining how it should be disposed of to comply with Consolidated Statutes C. ch. 26, before any division of it could be made between Ontario and Quebec under sec. 5 of that Act, the proportion of it derived from sales between the 14th of June, 1853, and the 7th of March, 1861, and appropriated by the Act of 1853 to the Improvement Fund, should be added to such fund and so applied.

The Arbitrators acceded to this claim, and directed (sec. 7 of the Award) that from the Common School Fund as held on the 30th of June, 1867, by the Dominion of Canada, amounting to $1,733,224.47, the sum of $124,685.18 should be, and the same was, thereby taken and deducted and placed to the credit of the Upper Canada Improvement Fund, the said sum of $124,685.18 being one-fourth part of the moneys received by the late Province of Canada between the 6th of March, 1861, and the 1st of July, 1867, on account of Common School Lands sold between the 14th of June, 1853, and the 6th of March, 1861.

It is contended by the Province of Ontario on behalf of the municipalities that the principle adopted by the Arbitrators must be applied to the proceeds of similar sales of Crown Lands, and the Province, for the benefit of the municipalities concerned, claims the aggregate sum of $101,771.68 as the one-fifth of the proceeds of the same sales of Crown Lands, which had been withheld by the late Province of Canada in the same manner as they withheld the proceeds of School Lands.

They claim, therefore, that the Upper Canada Improvement Fund on the 30th of June, 1867, was composed of these two sums, $124,685.18 and $101,771.68, the proceeds of Common School and Crown Lands respectively, and that this latter sum should be declared to have always been part of the fund, and should be credited to Ontario by the Dominion Government with interest from the 1st of July, 1867, for distribution among the said municipalities according to their respective rights and interest therein: and that the total amount of principal and interest aforesaid should be added to the debt of the late Province of Canada.

That the accounts between Canada and Ontario and between Ontario and Quebec under the B. N. A. Act are not settled and have remained open, and this claim is one of the unsettled cases, and has been, with other questions, the subject of negotiation ever since confederation.

Ontario and Quebec being conjointly liable to the Dominion for the amount by which the debt of the late Province of Canada exceeds the sum fixed, and there being an excess over this sum, the effect of allowing this claim will be to increase *pro tanto* that excess, and thus to add to the liability of the Province of Quebec to the Dominion.

That Province objects to the allowance claimed, and insists that the said claim was submitted to the arbitrators, and has been and must be deemed to have been disposed of and concluded in the award.

The question for the opinion of the Court is whether such claim should be allowed by the Dominion or not.

In addition to the documents in the case mentioned, there is also submitted an appendix of Statutes and papers bearing upon the question.

TREASURY DEPARTMENT, ONTARIO.
TORONTO, 30th May, 1889.

Hon. O. MOWAT,
Toronto.

MY DEAR MR. MOWAT,—You requested me to give you, shortly and informally, the circumstances under which the Township of Proton and other Townships found a claim to an allowance of one-fourth of the sales of Grammar School Lands sold by the old Province of Canada, between 1st January, 1886, and 30th June, 1887.

By 16 Vic., chap. 159, (1853), it was enacted that it should be lawful for the Governor in Council to reserve out of the proceeds of School lands in any county, a sum not exceeding one-fourth of such proceeds as a fund for public improvements within the county. By Orders in Council of 27th February, 1855, 7th December, 1855, 28th July, 1856; and of several subsequent dates, the existence of the Land Improvement Fund was recognized and expenditures therefrom authorized, and the one-fourth of collections from Grammar School lands up to 31st December, 1855, was alloted and paid to the municipalities or expended for improvements within the same.

By an Order in Council of 30th October, 1858, the following recommendation of the Minister of Agriculture was approved of; that in future none of the proceeds of the sales of Grammar School lands in Upper Canada be diverted from the purpose for which they were originally intended, save the proportion of the sales to 31st December, 1855, and no further appropriation or distribution of the Land Improvement Fund from Grammar School lands was thereafter made up to the date of Confederation.

The Legislature of Ontario in 1869 recognized the claims of the municipalities to this fund, both in connection with Grammar School and Crown lands sold between 1853 and 1861, and the fifty cents an acre on all such sales has been regularly paid to the municipalities since Confederation. That recognition by the Legislature of Ontario was upon the ground that the faith of the Crown was pledged to the purchasers of these lands that fifty cents an acre of the purchase money was to be expended in the locality for local improvements. That pledge applies to Grammar School as much as to Common School or Crown lands. Upon that broad ground they stand upon the same footing. They may not, however, be in all respects parallel in regard to the effect of the different Orders in Council purporting to abolish the fund or rescinding the Orders establishing it. The Order in Council of October 30th, 1858, is retroactive, and may the point not be raised that if this Order be held to be effective in putting an end to the fund arising from Grammar School lands, after the passing thereof, it may not be valid as regards collections thereafter made, and the one-fourth of which had already gone to the credit of the Land Improvement Fund? Again, could any point be taken that while the Act of 1853 authorizes, and the Orders recognizes the establishment of the fund as on school lands generally, the Order in Council of October, 1858, assumes the authority to discriminate and put an end to it as to one class of school lands (Grammar), and to continue it as to others?

The collections in the Townships of Proton from 1855 to 1858 shewed $8,117 as the proportion available for the Land Improvement Fund which was never paid over. This Proton claims with interest.

I have received from Mr. Browne of the Crown Lands Department, a memorandum book containing all Orders in Council and Reports in connection with the Land Improvement Fund, both of the old Province of Canada and the action

taken by the Legislature in Ontario. I send this to you as it may be of use in the preparation of the case. Please take care that the book is not mislaid, as Mr. Browne says it is the only full record in connection with this fund that is now extant.

I am, my dear Sir,
Yours truly,

A. M. ROSS.

I am asked whether in my opinion the Township of Proton, in respect of the Grammar School lands within that Township, is or was entitled to any appropriation under the 16 V. c. 159, s. 14, for what is generally described as the Upper Canada Improvement Fund.

In this Township, as I am informed, 47,000 acres were set apart for Grammar School lands in or before 1827, in accordance with a direction by King George III, recited in 2 Vic. ch. 10, that "a quantity of the waste lands of the Crown" should be set apart for the endowment of such schools.

The lands in Proton were first opened for sale on the 22nd of December, 1856

An Order in Council was passed on the 30th of October 1858, which recited a report from the Minister of Agriculture of the 16th April 1857, stating that under 16 V. c. 159, an Order in Council was passed appropriating one-fourth of the Grammar and Common School Funds for public improvements within the Townships whence the fund is derived; that the fund derived from the sales of school lands up to the 31st December 1855, had been appropriated: and recommending for reasons given, that in future none of the proceeds of the sales of the Grammar School lands in Upper Canada be diverted from the purpose for which they were originally intended save the proportion of the sales up to the 31st December, 1855. The Committee of the Executive Council recommend that the fund arising from Grammar School lands be reserved as suggested by the Minister of Agriculture, and their Report was approved by the Governor-General in Council on the 30th of October, 1858.

No such report or Order in Council of the 16th April, 1857, as recited can be found, and none making any such appropriation of Grammar School funds as it is said to have made. There is an Order in Council of the 16th of April, 1858, on the subject of the Improvement Fund, and one of the 28th July, 1856, but neither of them apparently can be the one referred to in the Order in Council of 30th of October, 1858.

The Order in Council of 28th July, 1856, directs only that the funds derived from the sales of land in each Township applicable to the Improvement Fund, be disposed of for the purposes specified by the municipal council of each municipality. Such council to report half-yearly to the Minister of Agriculture.

As has been already mentioned, there were no sales of land in Proton until December, 1856. The Order in Council of 1850, stopped all contributions to the Improvement Fund from Grammar School lands subsequent to 1855. It would seem therefore, that no claim can be made by that Township, because there were no sales of Grammar School lands in it until after the period at which the appropriation of the proceeds of such sales to the Improvement Fund was put an end to.

This appears to make any further opinion unnecessary.

With regard to the more general question whether Grammar School lands are within the 16 V. c. 159, sec. 14. I think, looking to the general history of, and legislation with regard to, such schools and their land endowments, so far as I am informed of it, that there is much room for doubt, and however this may be, in view of the claim as presented to the arbitrators and their award under the British North America Act there would seem to be great, if not insuperable difficulties in establishing with regard to the proceeds of Grammar School lands any such claim as is now being urged with regard to the proceeds of Crown lands.

The claims in respect of school lands and the Improvement Fund in connection with them was presented to the Arbitrators, as I understand, and disposed of by them. I do not think it can now be reopened; and the Grammar School lands cannot, as it seems to me, be regarded as unappropriated Crown lands.

(Signed) C. ROBINSON.

Toronto, March, 31st, 1890.

Case Submitted to Counsel.

Whether the Township of Proton in respect of the Grammar School Lands within that township is entitled, or was entitled to any appropriation under the 16 Vic., c. 159, sec. 14, generally described as "The Upper Canada Improvement Fund."

It appears by returns in the Crown Land Department that so far back as 1827, 47,000 acres in the Township of Proton had been selected as part of the waste lands of the Crown which King George III had been pleased to direct, should be set apart for the support of Grammar Schools within Upper Canada. Sec. 2 Vic., chap. 10 and 485 Vic., chap. 19.

The Township of Proton had within its limits other lands of the Crown not selected for Grammar School Lands, viz., the first and second ranges west of the Sydenham Road.

By 16 Vic., c. 186, passed on the same day as the 16 Vic., c. 159 all moneys arising from the sale of lands set apart (or which may hereafter be set apart) for the encouragement of Grammar Schools in Upper Canada, etc., "shall form a fund to be called the Upper Canada Grammar School Fund."

The Grammar School Lands in the Township of Proton were first opened for sale on 22nd December, 1856.

The Orders in Council following, namely of 28th July, 1856, 16 April, 1858, and 30th October, 1858, shew the action of the Governor in Council in relation to the 16 Vic., c. 159, s. 14, in so far as the question submitted to council is affected.

Copy of a Report of a Committee of the Honourable the Executive Council, of the late Province of Canada, approved by His Excellency the Governor-General in Council on 28th July, 1856.

"In reference to the fund for Public Improvements formed under the 14th "section of the Act, 16 Vic., Chap. 159.

" The committee recommend that the funds derived from the sales of lands " in each particular township, or other municipality and applicable to the pur- " pose of this fund, and not already apportioned, be applied to the making, main- " taining, altering or improving of the roads or bridges in each of those town- " ships, or other municipalities respectively; and be for this purpose distributed " and disposed by and through the municipal council of each such township or " other municipality; each such council to report to the Bureau of Agriculture ' the manner of expenditure of all such moneys, on the first days of January and " July in each year, and at any intermediate time within ten days after having " been called upon so to do by that department."

Copy of a Report of a Committee of the Honourable the Executive Council approved by His Excellency the Governor-General in Council, on 16th April, 1858.

On a memorandum, dated the 8th April, 1858, from the Honourable the Minister of Agriculture, stating that by Order in Council of 11th of January, 1856, a sum of £800 was granted for the making of a road between Elma and Wallace on one side, and Mornington and Maryborough on the other, in the County of Perth, such amount to be paid out of the Improvement Fund (16 Vic., cap. 159, sec. 14), whenever funds might be available.

That the funds available up to the 31st of December, 1855, in all the County of Perth, amounted to £990 5s. 2d., all of which was accruing to the Township of Elma for sales of land therein, no other township having any Improvement Fund up to that date.

That out of this sum of £990 5s. 2d., there had been expended (before the passing of the order granting to each township in its own share of the fund) the sum of £678 15s. 6d., leaving a balance of £311 9s. 8d., due to the Township of Elma up to 31st December, 1855.

That Mr. Daly, M.P.P., for Perth, and the reeves of Elma and Wallace now apply for the repeal of the order granting £800 from the fund for the road above mentioned, and that the fund be given by the receiver-general to the townships to which it severally belongs, as the balance of this £800 unexpended is not required for the performance of any existing contract.

The Minister therefore recommends that the balauce, being £311 9s. 8d., remaining due to Elma on the 31st December, 1855, be paid by the Receiver-General to that municipality upon receiving the required authority from the treasurer thereof, and that the division of the fund for 1856 for the County of Perth be in no way affected by the said order of 11th of January, 1856.

The committee submit the above suggestions to your Excellency's approval.

(Certified.)

(Signed), W. H. LEE,
C. E. C.

Copy of a Report of a Committee of the Honourable the Executive Council, approved by His Excellency the Governor-General in Council, on the 30th October, 1858.

On a Report dated 16th April, 1857, from the Honourable the Minister of Agriculture, reporting that under the 14th section of the Act, 16 Vic., cap. 159, an Order in Council was passed appropriating one-fourth of the Grammar and Common School Funds for Public Improvements within the townships whence the fund is derived. That the fund derived from the sales of school lands to 31st December, 1855, has been appropriated.

That the amount arising from the sale of Common School Lands for 1856 is £5,883, 11s. 5d., and that from Grammar School Lands for the same year only £766 14s. 9d. That the latter amount when divided among the various townships from which it has been derived, will be of very inconsiderable value for public improvements; but would be of very great value in aiding Grammar Schools in various ways; for instance, in securing masters for classical schools, many applications for additional Grammar Schools have been made, and recommending that in future none of the proceeds of the sales of the Grammar School Lands in Upper Canada be diverted from the purpose for which they were orginally intended, save the proportion of the sales to the 31st December, 1855, above alluded to.

The committee recommended that the fund arising from Grammar School Lands be reserved as suggested by the Minister of Agriculture.

(Certified.)

(Signed), W. H. LEE,
C. E. C.

OBSERVE.

There is no evidence of an Order in Council of 16th April, 1857, as recited in the order of 30th October, 1858, and it is assumed that the recital has reference to the Order in Council of 19th April, 1858, and that "1857" is a clerical error.

The Department of Justice at Ottawa states, "The report to council referred to in that of the 30th October, 1858, is that of 28th July, 1856."

The books in the Crown Lands Department, opened in the year 1856, are headed as follows:—

"Road Improvement Fund."

"Statements of the amounts available for Public Improvements on the sale of Crown, Grammar School and School Lands under 16 Vic. c. 159, s. 14.

The view of the claimants on the Upper Canada Improvement Fund on behalf of the township of Proton is:—

1. That the order of the 30th October, 1858, is to be read as recognizing a previous appropriation to the Upper Canada Improvement Fund from Grammar School land sales.

2. And that up to the rescission made on 30th October, 1858, of an order of council presumed to exist a right had accrued that the faith of the crown was

involved and that the order of rescission of 30th October, 1858, stopping the application to the Improvement Fund of a proportion of sales from Grammar Schoool lands made prior to the 31st December, 1855, ought not to be held to affect the sales made between 31st December, 1855, and 30th October, 1858 and that collections made after 30th October, 1858, on sales affected after 31st December, 1855, would be subject to application to the Improvement Fund.

The township of Proton has not been paid or credited with any sums out of the Upper Canada Improvement Fund on account of Grammar school sales.

There is no appropriation to the Improvement Fund by any Order in Council subsequent to the Order in Council of 28th July, 1856.

By the sessional papers of 1859 it appears that the sum of $12,997.53 000 deducted from the Upper Canada Improvement Fund and placed to the credit of the Grammar School Fund as the "proportion from Grammar Schools" for the years 1856 and 1857, which had been placed to the credit of the Improvement Fund as the proportion applicable from Grammar School sales in those years.

The questions on which the opinion of council is desired are :--

1. Are Grammar School lands, lands which are affected by the 16 Vic. c. 159 s. 14, and was any portion of the sales therefrom applicable to the Upper Canada Improvement Fund.

2. If Grammar School lands are within the Upper Canada Improvement Fund, are the proceeds of sales of Grammar School lands in Proton, which were opened for sale on 21st of December. 1856, liable to be applied to the Upper Canada Improvement Fund in view of the Orders in Council of 28th July, 1856, 16th April, 1858, and 30th October, 1858.

3. And if so liable to the Improvement Fund are the proceeds of sales made between 21st December, 1856, and 30th October, 1858, but received after the latter date also applicable to the Improvement Fund.

REPORT

Of the Secretary and Registrar of the Province of Ontario, for the year ending the 31st day of December, 1889.

Presented to the Legislative Assembly of Ontario,

By Command,

J. M. GIBSON,
Secretary.

Provincial Secretary's Office,
Toronto, 31st March, 1890

REPORT

Of the Secretary and Registrar of the Province of Ontario, for the year ending the 31st day of December, 1889.

To the Honourable

SIR ALEXANDER CAMPBELL,

Knight Commander of the Order of St. Michael and St. George, Member of the Queen's Privy Council for Canada, &c., &c., &c., Lieutenant-Governor of the Province Ontario.

May it please Your Honour,

The undersigned begs respectfully to present to Your Honour the report prepared with respect to the chief transactions of the Department of the Secretary and Registrar of the Province of Ontario during the year ending the 31st day of December, 1889.

J. M. GIBSON,

Secretary and Registrar
of the Province of Ontario.

PROVINCIAL SECRETARY'S OFFICE,
TORONTO, 31st March, 1890.

PROVINCIAL SECRETARY'S OFFICE,
TORONTO, 31st March, 1890.

To the Honourable

JOHN MORISON GIBSON, M.A., LL.B., Q.C., M.P.P.,

Secretary of the Province of Ontario, &c., &c., &c.

SIR,—I have the honour to submit to you herewith for your information, a report respecting the transactions of this office during the year 1889.

The marked increase in the correspondence of the office mentioned in the preceding report, was maintained during the past year, notwithstanding the fact that all of the legal and municipal returns, formerly made to this Department, are now made directly either to the Inspector of Legal Offices or to the Bureau of Industries. The records shew that during the year, eleven thousand and twenty-seven dispatches, letters and telegrams were received at the office, and that twelve thousand eight hundred and eighty-seven despatches, letters and telegrams were sent out.

From the Office Register, it appears that the new subjects considered during the year, amounted in number to four thousand four hundred and thirty-four, as compared with four thousand two hundred and seventy-five in 1888. Upon the new fyles and those of other years, two thousand nine hundred and nine references were made to other departments, and two thousand seven hundred and forty-three reports thereon received therefrom.

During the year one hundred and twenty-seven applications for Letters Patent under the Joint Stock Companies' Act were favourably considered and charters granted. These figures indicate a slight increase over the number issued the preceding year, notwithstanding the fact that under the operation of fifty-one Victoria, chapter twenty-four, entitled "An Act for the Incorporation of Cheese and Butter Manufacturing Associations," there has been, as was to have been expected, a considerable falling off in the number of applications for the incorporation by Letters Patent of cheese and butter companies.

The aggregate capital of the companies incorporated amounted to the unusually large sum of eleven million, six hundred and forty-three thousand, eight hundred and forty dollars.

During the year, for various purposes, including the extension of powers, the increase of capital and, in one case, the reduction of capital, eight Supplementary Letters Patent were issued. The total capital of the companies incorporated and increases of capital above referred to, amounted to thirteen million two hundred and twenty-one thousand, eight hundred and forty dollars.

Detailed lists of the Letters and Supplementary Letters Patent appear elsewhere as appendices to this report.

During the year the following proclamations by His Honour the Lieutenant-Governor appeared in the *Gazette* :—

I. To add certain territory to the existing limits of the then Village of West Toronto Junction.

II. To annex under certain conditions the then Town of Parkdale to the City of Toronto.

III. To bring into full force and effect the Act passed in the forty-ninth year of Her Majesty's reign, entitled "An Act respecting Free Grants and Homesteads to actual settlers on public lands in the District of Rainy River."

IV. To offer a reward for such information as would lead to the arrest of one Albert Edward Wilson, for the murder of one Mary Marshall, in the Township of Warwick, in the County of Lambton.

V. To bring into effect an Act passed in the fiftieth year of Her Majesty's reign, entitled "An Act respecting the federation of the University of Toronto and University College, with other Universities and Colleges."

VI. In regard to a clerical error in the eighth section of "The Act to make further provision respecting the Districts of Muskoka and Parry Sound," and fixing a day for the sittings of the District Court and the General Sessions of the Peace for the said District of Muskoka and Parry Sound at the Town of Bracebridge.

VII. To erect the Village of Midland into a town, and to divide the said town into wards.

VIII. To annex to the Township of Alfred in the United Counties of Prescott and Russell, a certain block or gore of land bounded on the North by the Ottawa River, on the East by the Townships of Longueuil and Caledonia, on the South by the Township of South Plantagenet, and on the West by a line run on the ground one hundred years ago and recognized by the Department of Crown Lands.

IX. To re-divide the Town of Owen Sound into four wards.

X. To erect the Village of Leamington into a town, and to annex thereto certain portions of the adjoining Township of Mersea.

XI. To bring into full force and effect the Act passed in the fifty-second year of Her Majesty's reign, entitled "An Act respecting the Boards of the Baptist Convention of Ontario and Quebec."

XII. To offer a reward for such information as would lead to the arrest and conviction of one Henry Williams for the murder of one William Lyman, in the Town of Windsor, in the County of Essex.

XIII. To annex to the City of Toronto a certain piece of land on the East side of Greenwood's Avenue.

XIV. To annex to the Townships of Hilton and Jocelyn respectively, the remainder of the unorganized portion of St. Joseph's Island, in the District of Algoma.

XV. To erect the Village of Gananoque into a town and divide the new town into wards.

XVI. To erect the Village of Carleton Place into a town, and to annex thereto certain portions of the adjoining Townships of Ramsey and Beckwith.

XVII. To erect the Village of Essex Centre into a town by the name of Essex, and to annex thereto certain portions of the adjoining Townships of Gosfield North, Colchester North and Maidstone.

XVIII. To summon the members of the Legislative Assembly for the despatch of business on Thursday, the 30th of January, 1890.

XIX. To bring into force that portion of fifty-two Victoria, chapter nineteen, making provision for the division of the City of Toronto into two separate registry divisions, to be called respectively East and West Toronto, and defining the limits thereof.

The following is a synopsis of the routine work of the office during the year 1889:

(*a*) Twenty-nine thousand seven hundred and twelve Marriage Act forms were distributed to issuers throughout the province, from whom the sum of $2,971 was received in fees therefor.

(*b*) The usual supplies of blank forms for the use of sheriffs in the examination for removal to asylums of persons committed to their gaols, as dangerous lunatics, were printed and sent out.

(*c*) A very large number of blank forms for the statutory returns required of Joint Stock Companies was distributed.

(*d*) During the year two hundred and sixty-nine duly certified lunatics were removed to the asylums from the county gaols; ninety-one persons who had recovered were discharged from the asylums, and one was transferred from one asylum to another. In the month of January last, every person duly certified to be insane and to be a proper subject for asylum treatment and awaiting transfer, was removed from the gaols to the asylums. Ability thus to relieve the gaols of their insane population, was due to the opening of the branch asylum at Mimico, and to the changes in the various institutions that were brought about by the creation of more room for the treatment and care of patients.

(*e*) During the year, eight Superior Court, five Surrogate, and one hundred and seven Notarial Certificates were issued, and five hundred and eighteen appointments to office, and one hundred and forty-one public notices were gazetted. There also appeared in the *Gazette* eleven proclamations made by His Excellency the Governor-General with respect to certain proceedings had under the provisions of The Second Part of the Canada Temperance Act.

(*f*) The fees received during the year for all purposes amounted to $8,801.27.

Appended to this report will be found various tables and statements giving in more detail some of the transactions above referred to.

All of which is respectfully submitted.

G. E. LUMSDEN,
Assistant Secretary.

APPENDIX I.—Comparative statement showing the work done in the Provincial Secretary's office during the years 1868, 1871, 1875, 1877, 1881, 1883, 1886, 1887, 1888 and 1889.

WORK DONE.	1868.	1871.	1875.	1877.	1881.	1883.	1886.	1887.	1888.	1889.
Number of fyles, as shown by the office register	1,172	1,264	1,862	1,983	2,408	3,336	3,575	3,967	4,275	4,434
Letters received	2,107	1,690	3,289	3,162	4,162	5,586	6,097	9,613	10,626	11,027
Letters sent	1,667	1,280	3,326	3,358	3,756	4,646	5,734	9,227	13,458	12,887
References to other departments	482	912	1,642	1,528	1,790	1,885	2,899	2,369	2,948	2,743
Reports from other departments	256	470	966	1,232	1,395	1,275	2,689	1,786	2,760	2,909
Letters Patent, issued under The Joint Stock Companies' Act	19	24	57	38	119	114	90	88	117	123
Supplementary Letters Patent	.....	.....	.....	.....	.....	10	14	10	19	8
Circulars	240	60	1,429	891	954	500	200	250	600	100
Declarations fyled	33	30	.....	.....	.....	.....	.....	.....	.....	.....
Warrants *re* lunatics	34	195	160	256	359	310	394	360	430	360
Notarial certificates	48	72	37	131	76	115	93	122	110	107
Statutory returns	52	58	135	792	2,500	3,200	1,000	1,200	1,500	2,000
Marriage Act forms, etc., issued	.....	.....	28,422	25,384	27,882	29,920	26,254	29,378	29,911	29,712
Printed forms distributed to sheriffs	.....	.....	.....	.....	1,800	1,700	2,000	3,000	3,500	4,000
Other printed forms for municipal and other returns	.....	.....	.....	.....	3,500	3,600	3,350	3,200	2,700	3,000
Commissions under Great and Privy Seals	135	190	139	170	275	318	227	214	534	359
Fees received	$1,938	$2,282	$5,688	$5,253	$7,021	$8,199	$6,947	$7,711	$9,190	$8,801
Ontario Gazette:										
Proclamations published	.....	16	21	33	17	4	13	4	13	19
Appointments gazetted	110	149	94	460	525	461	535	613	541	518
Public notices	47	58	80	36	127	123	119	121	150	141

APPENDIX II.—A detailed statement of fees

		Number.	January.	Number.	February.	Number.	March.	Number.	April.
			$ c.		$ c.		$ c.		$ c.
Commissions—Coroners	$13 00	1	13 00	2	26 00	..	.....	..	.....
do Notaries Public	8 00	10	80 00	14	112 00	4	32 00	3	24 00
do others under the Great Seal	13 00	4	52 00	2	26 00	4	52 00	1	13 00
Ferry licenses	15 00	..	.....	..	.....	..	.....	..	.....
Superior Court certificates	4 00	..	.....	..	.....	1	4 00	..	.....
Surrogate do do	2 00	..	.....	..	.....	..	.....	..	.....
Judicial Notary do	1 00	9	9 00	5	5 00	11	11 00	15	15 00
Subpœna	1 00	..	.....	..	.....	1	1 00	..	.....
Passports	1 00	..	.....	..	.....	..	.....	..	.....
Companies By-laws	5 00	..	.....	..	.....	1	5 00	..	.....
Land grants	20 00	..	.....	..	.....	1	20 00	..	.....
Land release	20 00	..	.....	..	.....	..	.....	..	.....
Escheat	20 00	..	.....	..	.....	..	.....	..	.....
Order in Council	12 00	..	.....	1	12 00	..	.....	..	.....
Charters of incorporation	10 00	2	20 00	3	30 00	4	40 00	1	10 00
do	20 00	..	.....	..	.....	..	.....	1	20 00
do	25 00	..	.....	1	25 00	..	.....	1	25 00
do	30 00	3	90 00	4	120 00	6	180 00	5	150 00
do	40 00	2	80 00	..	.....	1	40 00	3	120 00
do	50 00	4	200 00	1	50 00	2	100 00	1	50 00
do	60 00	1	60 00	..	.....	1	60 00	1	60 00
Copies, searches, etc		..	3 20	..	0 82	..	3 00	..	1 80
Marriage licenses		..	162 00	..	247 00	..	250 00	..	221 20
		36	769 20	33	653 82	37	798 00	32	710 00

received and the services rendered therefor.

Number.	May.	Number.	June.	Number.	July.	Number.	August.	Number.	September.	Number.	October.	Number.	November.	Number.	December.	Total received.	Total amount.
	$ c.		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.		$ c.
..	.....	..	.....	..	.....	..	.....	3	39 00	1	13 00	1	13 00	2	26 00	10	130 00
9	72 00	9	72 00	10	80 00	8	64 00	9	72 00	4	32 00	10	80 00	8	64 00	98	784 00
..	.....	2	26 00	3	39 00	2	26 00	..	.....	..	.....	..	.....	..	.....	18	234 00
..	.....	..	.....	..	.....	..	.....	..	.....	1	15 00	..	.....	..	.....	1	15 00
2	8 00	..	.....	1	4 00	..	.....	2	8 00	..	.....	1	4 00	1	4 00	8	32 00
1	2 00	..	.....	..	.....	..	.....	1	2 00	1	2 00	2	4 00	..	.....	5	10 00
6	6 00	11	11 00	9	9 00	3	3 00	13	13 00	11	11 00	11	11 00	3	3 00	107	107 00
..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	1	1 00
3	3 00	1	1 00	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	4	4 00
1	5 00	..	.....	1	5 00	2	10 00	..	.....	..	.....	1	5 00	..	.....	6	30 00
..	.....	1	20 00	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	2	40 00
..	.....	..	.....	..	.....	1	20 00	..	.....	..	.....	..	.....	..	.....	1	20 00
..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	1	20 00	..	.....	1	20 00
..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	1	12 00	2	24 00
3	30 00	1	10 00	1	10 00	3	30 00	5	50 00	1	10 00	..	.....	2	20 00	26	260 00
..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	1	20 00
..	.....	..	.....	..	.....	..	.....	..	.....	1	25 00	..	.....	..	.....	3	75 00
2	60 00	6	180 00	4	120 00	7	210 00	7	210 00	5	150 00	5	150 00	4	120 00	58	1740 00
3	120 00	1	40 00	2	80 00	..	.....	1	40 00	..	.....	1	40 00	2	80 00	16	640 00
1	50 00	1	50 00	..	.....	2	100 00	2	100 00	..	.....	2	100 00	..	.....	16	800 00
..	.....	..	.....	4	240 00	1	60 00	2	120 00	..	.....	2	120 00	2	120 00	14	840 00
..	2 50	..	1 50	..	0 75	..	3 80	..	1 05	..	5 60	..	1 60	..	0 25	...	25 87
..	191 00	..	307 00	..	188 00	..	161 00	..	258 00	..	292 00	..	295 00	..	377 20	...	2949 40
31	549 50	33	718 50	34	775 75	30	687 80	45	913 05	25	555 60	37	843 60	25	826 45	398	8801 27

APPENDIX III.

Detailed statement of the Joint Stock Companies, incorporated by Letters Patent under R.S.O., cap. 157, during the year 1889.

Name of Company.	Amount of stock of Company.	Number of shares.	Amount of each share.
	$		$
The Sarnia Oil Company	250,000	2,500	100
The Burlington Manufacturing Company (Limited)	25,000	250	100
The Leamington Electric Light Company (Limited)	3,000	150	20
The M. Brennan & Sons Manufacturing Co. of Hamilton (Ltd.)	100,000	1,000	100
The Charles Stark Company (Limited) of Toronto	200,000	2,000	100
The Economy Engine and Machine Company of Gananoque	100,000	1,000	100
The B. Greening Wire Company (Limited)	100,000	1,000	100
The Geo. W. Shaver Company of Toronto (Limited)	3,000	150	20
The Pembroke Electric Light Company	20,000	200	100
The London Wall Paper and Picture Frame Company	3,000	30	100
The Dundas Curling and Skating Rink Company	5,000	500	10
The Standard Needle Company of Paris	50,000	1,000	50
The J. E. Bryant Company of Toronto (Limited)	50,000	1,000	50
The St. John's Good Templar's Hall Company of Toronto	3,000	600	5
The Construction and Paving Company of Ontario (Limited)	20,000	200	100
The Windsor Manufacturing and Novelty Works Company (Ltd.)	20,000	2,000	10
The Ontario Terra-Cotta Brick and Sewer Pipe Company (Ltd.)	150,000	1,500	100
The Wallaceburg Electric Light Company	3,000	100	30
The Utterson Lumber Company	100,000	1,000	100
The Grant Lithographing Company (Limited) of Toronto	150,000	1,500	100
The Arthur Elevator Company	3,000	150	20
The Kingston Odd-Fellows' Building Association (Limited)	30,000	3,000	10
The Ontario Leather Matting Company (Limited)	25,000	250	100
The Bishop Ridley College of Ontario	60,000	1,200	50
The Wanderers' Bicycle Club (Limited)	2,000	200	10
The Deseronto Driving Park Association (Limited)	2,500	250	10
The Canadian Land and Immigration Co. of Haliburton (Ltd.)	50,000	25,000	2
The Ireland "National Food" Company of Toronto (Limited)	100,000	1,000	100
The Windsor Crimped Stay Company (Limited)	10,000	400	25
The Ontario Basket Company (Limited)	12,000	120	100
The Hawkesbury Milling Company (Limited)	15,600	312	50
The London Medical and Dispensing Company (Limited)	3,000	60	50
The C. Beck Manufacturing Company of Penetanguishene (Ltd.)	250,000	2,500	100
The Corporation of the Toronto Church School (Limited)	25,000	250	100
The Economic Direct Supply Company of Toronto (Limited)	50,000	500	100
The Clyde Milling Company (Limited)	20,000	1,000	20
The Simcoe Electric Light Company (Limited)	20,000	1,000	20
The Maple Leaf Gold Mining Company of Ontario (Limited)	20,000	2,000	10
The Amherstburg Driving Park Association (Limited)	5,000	1,000	5
The Eureka Manufacturing Company of Toronto (Limited)	150,000	1,500	100
The Red Cross Hospital and Convalescent Home Co. of Orillia (Ld.)	10,000	2,000	5
The Ontario Patent Spindle Banding Co. of Toronto (Limited)	50,000	500	100
The Electric and Accumulator Company of Toronto (Limited)	125,000	5,000	25
The Sydenham Mica and Mining Company (Limited)	250,000	5,000	50
The Magee Manufacturing Company (Limited)	50,000	500	100
The Ontario Produce Company (Limited)	100,000	1,000	100
The J. R. Stouffer Company of Berlin (Limited)	6,000	120	50
The Dry Dock and Wrecking Company of Collingwood (Limited)	50,000	500	100
The Ontario Furniture Company (Limited)	25,000	250	100
The Renfrew Trotting and Driving Association (Limited)	3,000	300	10
The Woodstock Electric Light, Power and Street Railway Co. (Ltd)	50,000	500	100
The Lindsay Grain Elevator Company (Limited)	30,000	300	100
The Idyl-Wilde Fish and Game Club (Limited)	30,000	300	100
The Port Hope Industrial Exhibition Company (Limited)	1,500	150	10
The Bankers' Safe Deposit Warehousing & Loan Co. of Ont. (Ltd.)	1,000,000	10,000	100
The Commonwealth Printing and Publishing Co. of Ontario (Ltd.)	20,000	4,000	5
The Great South Western Gas and Oil Co. of Amherstburg (Ltd.)	10,000	200	50
The Comber Oil Company (Limited)	45,000	450	100
The Ambrose-Winslow Brewing and Malting Co. of Pt. Hope (Ltd.)	100,000	200	500
The Barrow Bay Lumber Company (Limited)	50,000	500	100
The West End Mining Company of Ontario (Limited)	2,000,000	200,000	10
The St. George Water Supply Company (Limited)	3,000	30	100

APPENDIX III.

Detailed Statement of the Joint Stock Companies, etc.—*Continued.*

Name of Company.	Amount of stock of Company.	Number of shares.	Amount of each share.
	$		$
The Goderich Organ Company (Limited)	10,000	200	50
The Toronto and Midland Manufacturing Company (Limited)	20,000	400	50
The Howard Furnace Company of Berlin (Limited)	24,000	240	100
The Electric Light, Telephone and Power Co. of Rat Portage (Ltd.)	30,000	600	50
The Toronto Incandescent Electric Light Company (Limited)	250,000	2,500	100
The Meaford Transportation Company (Limited)	30,000	300	100
The Cook & Brothers' Lumber Company of Ontario (Limited)	1,200,000	12,000	100
The Fire Extinguishing, Aerating and Chemical Co. of Ont. (Ltd.)	300,000	3,000	100
The Central Gas and Oil Company of Essex (Limited)	5,000	100	50
The Bishop Bethune College Company of Oshawa (Limited)	15,000	150	100
The Pellet Manufacturing Company of Belleville, Ont. (Limited)	10,000	200	50
The Port Hope Electric Light and Power Company (Limited)	49,000	490	100
The Caledon Lake Company (Limited)	1,240	31	40
The Niagara Casket and Coffin Company (Limited)	100,000	1,000	100
The Niagara Falls Natural Gas, Fuel and Light Co. (Limited)	40,000	800	50
The Penetanguishene Ship-yard Company (Limited)	10,000	200	50
The Union Electric Light and Power Co. of St. Catharines (Ltd.)	10,000	100	100
The A. G. Peuchen Company of Toronto (Limited)	100,000	1,000	100
The Hamilton Bicycle Track and Athletic Company (Limited)	6,000	600	10
The Missionary Echo Publishing Company (Limited)	3,000	600	5
The Dovercourt Ancient Order of Forresters' Hall Co. (Limited)	15,000	3,000	5
The Gananoque Electric Light and Water Supply Co. (Limited)	40,000	800	50
The Sunnyside Boating Company of Toronto (Limited)	5,000	100	50
The Bradley-Morris and Reid Company of Hamilton (Limited)	30,000	300	100
The Sanitary Engineering Company of Toronto (Limited)	25,000	250	100
The Whaley Lumber Company of Huntsville (Limited)	20,000	1,000	20
The Gould Lake Mining Company (Limited)	300,000	3,000	100
The Hawthorn Woolen Company of Carleton Place (Limited)	60,000	600	100
The Good Templars' Fairy Lake Camp Association (Limited)	3,000	300	10
The Toronto Flats and Power Company (Limited)	175,000	1,750	100
The Cobourg Electric Light and Power Company (Limited)	45,000	450	100
The Greybill Manufacturing Company (Limited)	25,000	250	100
The Home Circle Printing and Publishing Co. of Toronto (Ltd.)	3,000	1,500	2
The Palmerston Brewing Company (Limited)	50,000	500	100
The Globe Furniture Company (Limited)	50,000	500	100
The C. F. Smith Company of Belleville (Limited)	50,000	500	100
The Wm. H. Bell Manufacturing Company of Toronto (Limited)	25,000	250	100
The Protestant Life Insurance Company of Ontario (Limited)	500,000	5,000	100
The Brigden Fair Trading Mill and Elevator Company (Limited)	3,000	300	10
The Bancroft Iron Company (Limited)	1,000,000	10,000	100
The Cannington Electric Light Company (Limited)	3,000	60	50
The North Barton Public Hall Company (Limited)	2,000	20	100
The Herald Printing Company of Hamilton (Limited)	40,000	400	100
The Dossett Manufacturing Company of Toronto (Limited)	45,000	900	50
The Hamilton Woven Cord Furniture Company (Limited)	50,000	500	100
The Toronto Fur Company (Limited)	150,000	3,000	50
The Acton Tanning Company (Limited)	50,000	500	100
The Oriental Shade and Tarpaulin Co. of Toronto (Limited)	25,000	500	50
The Hanover Furniture and Undertaking Company (Limited)	25,000	250	100
The Toronto Sanitarium Association (Limited)	50,000	1,000	50
The Park Publishing Company of Toronto (Limited)	3,000	60	50
The Bloor Street Lumber Company of Toronto (Limited)	25,000	250	100
The Dovercourt Twine Mills Company of Toronto (Limited)	100,000	1,000	100
The Kawigamog Improvement Company (Limited)	10,000	400	25
The Hess Manufacturing Co. of West Toronto Junction (Limited)	40,000	800	50
The Bowmanville Curling Club (Limited)	1,000	100	10
The Lindsay Stone and Lime Company (Limited)	100,000	1,000	100
The Midland Driving Park Company (Limited)	3,000	300	10
The Toronto and Big Creek Shooting Company (Limited)	8,000	16	500
The Brown-Whiting Shoe Company of Berlin (Limited)	50,000	500	100
The Kingston Skating and Curling Association (Limited)	10,000	400	25
	$11,643,840		

APPENDIX III—*Continued.*

Detailed Statement of Supplementary Letters Patent issued to Joint Stock Companies during the year 1889.

Decreasing Capital Stock.	From.	To.	Decrease.
D. W. Beadle Nursery Company of St. Catharines (Limited)	$100,000 00	$40,000 00	$60,000 00

Detailed Statement of Supplementary Letters Patent issued to Joint Stock Companies during the year, 1889.

Increasing Capital Stock.	From.	To.	Increase.
	$ c.	$ c.	$ c.
The Pine River Cheese and Butter Company of Huron Township, Ontario	3,000 00	4,000 00	1,000 00
The Toronto Real Estate Investment Company	400,000 00	2,000,000 00	1,600,000 00
The Barrie Electric Light Company	20,000 00	50,000 00	30,000 00
The Athenæum Club of Toronto	3,000 00	10,000 00	7,000 00
Increase of Capital Stock of Companies previously incorporated			1,638,000 00
Decrease of Capital Stock of Companies previously incorporated			60,000 00
			1,578,000 00
Capital of Joint Stock Companies incorporated during 1889			11,643,840 00
Total capital represented			$13,221,840 00

Extending the powers of the undernamed Companies.

The Toronto General Trusts Company.
The Presbyterian News Company of Toronto.
The Athenæum Club of Toronto.

APPENDIX IV.

Synopsis of Returns to Addresses and Orders of the House presented to the Legislative Assembly during the Session of 1889.

No.	Sessional Papers No.	SUBJECT.	MOVER.
1	28	Date of appointment of Asa Beach as License Inspector for Dundas Co., number of convictions and penalty in each case for violations of Canada Temperance Act and particulars of unsuccessful prosecutions since said date.	Mr. Whitney.
2	38	Amount of Fire Insurance at risk on 31st December in each year from 1881 to 1887, etc.	Mr. Snider.
3	47	Cost of Government Drainage Works in Lambton, Kent, Elgin and Essex	Mr. Clancy.
4	49	Report of Prison Inspector and Warden of Central Prison on Prison Labor in the United States	Mr. Balfour.
5	52	Correspondence relating to the reduction of the Township of Raleigh's indebtedness to the Province.	Mr. Clancy.
6	55	Orders-in-Council, etc., etc., relative to the dismissal of Archibald McIntyre, License Inspector, East Elgin	Mr. Ingram.
7	58	List of Text Books for each of the last five years for use in High, Public and Separate Schools	Mr. Craig.
8	60	Documents relating to the Provincial Boundaries Case before the Privy Council, and the Case as to the Ownership of Lands in the formerly disputed territory	Mr. Harcourt.
9	61	Houses of Refuge, Poor Houses or similar institutions in Cities, Towns and Counties, their cost and how maintained, etc.	Mr. Clarke (Wellington.)
10	62	Number of visitors to Queen Victoria Niagara Falls Park in 1888, revenue and expenses, and names of officials	Mr. Morin.
11	63	Amount of Poll Tax received in each City, Town and Village for the year 1886	Mr. Field.
12	64	Amount of water rate paid to the City of Toronto for Public Institutions...	Mr. McLaughlin.
13	72	Names of persons to whom fees have been paid as Counsel or Solicitor in prosecutions under Canada Temperance Act, etc.	Mr. French.
14	77	Poor relief granted by Municipalities by direct grant or remission of Taxes in 1887 and 1888	Mr. Clarke (Wellington.)

PROVINCIAL REGISTRAR'S OFFICE, ONTARIO.

TORONTO, 2nd April, 1890.

SIR,—I have the honor to submit for your information a statement of the work done in the Registrar's Branch of the Provincial Secretary's Department from 1st January, 1889 to 31st December, 1889.

I have the honor to be,

Sir,

Your obedient servant,

JOHN F. C. USSHER,

Deputy Registrar.

The HON. J. M. GIBSON,

Provincial Registrar.

A CONDENSED STATEMENT showing the work done in the Provincial Registrar's Office of the Department of the Provincial Secretary for the year 1889.

DOCUMENTS.	Recorded	Indexed
Commissions—Great Seal	228	228
Commissions—Privy Seal	118	118
Special Commissions	13	13
Letters Patent—Incorporations	127	127
Supplementary Letters Patent	7	7
Bonds and Covenants	34	34
Warrants removing Lunatics	269	269
Warrants discharging Lunatics	91	91
Crown Land Patents	962	962
Special Deeds	22	22
Certificates—Provincial Land Surveyors	10	10

In addition to the foregoing an annual Return of all Bonds and Securities recorded in this Department is prepared for the Legislative Assembly, and a quarterly Return of all the lands is also sent to the Registrar of each County and District in which Patents have issued, giving description of land patented, name of patentee, date, etc., also notices of all cancellations and surrenders of patents, etc.

JOHN F. C. USSHER,

Deputy Registrar.

STATEMENT

Of Receipts and Expenditure by the Treasurer of Ontario from 1st July, 1867, to 31st December, 1889.

Presented to the Legislative Assembly,

By Command,

J. M. GIBSON,
Secretary.

PROVINCIAL SECRETARY'S OFFICE,
TORONTO, 2nd April, 1890.

ALSO

RETURN.

To an Order of the Legislative Assembly, passed on the 5th day of March, 1890, for a Return shewing the amount still to be paid on Railway Aid Certificates issued by the Province with the dates when the same become due and payable. Also showing the amounts of Annuity Certificates issued by the Province with the dates when they become due and payable. Also an Estimate of the present value of the said Railway Aid Certificates and Annuity Certificates respectively. Also specifying the amount to be paid on account of principal and interest respectively in each year during the currency of said certificates.

By Command

J. M. GIBSON,
Secretary.

PROVINCIAL SECRETARY'S OFFICE,
TORONTO, 2nd April, 1890.

STATEMENT of Receipts by the Treasurer of the Province

Years.	Dominion of Canada Subsidy and Specific Grant.	Dominion of Canada, Interest on special funds.	Dominion of Canada Marriage Licenses and Municipal Loan Fund, etc.	Interest on Investments.	Crown Lands Department.
	$ c.	$ c.	$ c.	$ c.	$ c.
1867	40,000 00				142,889 63
1868	1,196,872 80	136,696 62	134,874 23	5,031 25	632,113 65
1869	1,185,751 18	136,696 62	283 99	80,236 43	879,542 34
1870	1,076,729 84	136,696 62	37,654 05	146,123 65	736,426 10
1871	883,303 38	136,696 62	35,466 00	148,703 60	869,585 36
1872	903,303 38	136,696 62	35,361 00	221,757 95	1,437,372 52
1873	1,030,088 09	136,696 62	41,057 00	256,914 83	1,121,264 46
1874	1,196,872 80	136,696 62		248,130 68	717,248 28
1875	1,196,872 80	136,696 62		232,101 06	640,346 34
1876	1,196,872 80	136,696 62		164,170 43	640,015 92
1877	1,196,872 80	136,696 62		222,251 18	628,712 90
1878	1,196,872 80	136,696 62		156,251 46	445,278 92
1879	1,196,872 80	136,696 62		127,645 70	457,340 27
1880	1,196,872 80	136,696 62		198,437 42	616,311 96
1881	1,196,872 80	136,696 62		82,204 41	992,504 01
1882	1,196,872 80	136,696 62		101,927 93	1,095,152 24
1883	1,196,872 80	136,696 62		76,324 28	635,447 25
1884	1,196,872 80	207,903 86		57,521 79	570,305 41
1885	1,196,872 80	279,111 10		50,284 86	736,864 95
1886	1,196,872 80	279,111 10		55,893 63	814,813 28
1887	1,196,872 80	279,111 10		66,169 32	1,113,142 77
1888	1,196,872 80	279,111 10		95,987 69	1,436,336 28
1889	1,196,872 80	280,000 00		75,025 98	1,196,455 88
Totals	25,466,013 47	3,791,494 18	284,696 27	2,869,095 53	18,555,470 72

of Ontario from July 1st, 1867, to December 31st, 1889.

Licenses.	Law Stamps.	Algoma Taxes.	Education Department.	Casual Revenue.	Public Institutions.	Years.
$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	
.....	.....	.....	.....	10 00	.....	1867
.....	.....	95 34	24,742 06	43,011 33	8,591 90	1868
58,924 74	42,989 55	2,664 11	24,976 07	12,870 33	8,780 65	1869
60,652 26	78,477 94	2,547 56	26,649 17	20,810 91	19,457 90	1870
58,558 55	77,650 97	5,014 12	35,450 65	23,567 20	20,675 07	1871
75,355 96	87,165 88	7,685 27	53,797 58	26,776 99	25,295 66	1872
82,152 78	95,249 08	3,801 90	51,480 21	77,355 83	31,664 51	1873
115,499 17	75,164 01	5,571 43	55,307 31	8,548 80	30,700 99	1874
107,590 10	63,950 93	5,045 45	57,808 25	24,178 85	27,832 30	1875
85,257 56	66,055 26	4,993 07	57,805 65	19,457 23	34,210 75	1876
78,820 96	68,756 99	1,032 35	57,781 38	29.526 35	39,875 07	1877
75,529 85	66,291 82	585 76	1,793 61	20,293 25	67,971 26	1878
85,220 17	71,383 83	9,948 96	47,961 95	26,642 32	66,089 42	1879
91,207 68	66,984 00	1,863 92	44,284 27	29,592 91	63,982 54	1880
91,604 01	57,502 10	16,210 64	31,450 42	32,752 50	98,782 01	1881
92,360 72	52,399 89	14,099 22	30,052 86	30,578 77	79,646 00	1882
96,460 50	61,845 02	4,106 02	28,175 25	29,578 83	93,846 43	1883
211,353 71	66,599 98	2,215 85	37,969 35	33,426 45	110,211 68	1884
162.330 07	66,988 02	1,620 38	38,749 72	39,556 48	99,112 62	1885
211,162 76	62,291 65	13,143 40	38,229 50	42,572 83	89,220 09	1886
202,455 56	68,439 88	15,247 60	24,807 59	44,589 95	84,004 34	1887
233,785 59	81,044 50	2,275 73	33,173 74	46,819 02	99,320 21	1888
302,734 44	84,841 65	3,911 49	35,359 71	53,310 44	131,199 56	1889
2,579,017 14	1,462,072 95	123,679 57	887,806 30	735,827 57	1,330,470 96	....

STATEMENT of Receipts by the Treasurer of the Province of Ontario

Years.	Public Buildings.		Refunds *re* Public Works.	Sale of lands *re* New Parliament Buildings Fund.	Sale of lands *re* Toronto Asylum
	Insurance.	Refunds.			
	$ c.	$ c.	$ c.	$ c.	$ c.
1867					
1868					
1869					
1870					
1871					
1872					
1873		3,713 14			
1874		1,810 20			
1875		1,233 04			
1876		26,487 50	137 84		
1877		11,925 71	117 16		
1878	9,000 00	5,138 46	521 91		
1879	6,900 00	625 63			
1880	1,500 01	29,338 20	18 00		
1881		1,140 19			
1882	1,500 00	707 95			
1883	9,798 02	34 88			
1884	753 36	645 60			
1885	5,000 08	202 15			
1886	21,608 11	6,155 48		15,716 67	
1887		200 00		122,211 57	
1888	1,616 36	4,000 09	400 00	28,861 71	30,471 81
1889	80 10	1,089 50		315 74	119,851 20
Totals	57,756 04	94,447 72	1,194 91	167,105 69	150,323 01

from July 1st, 1867, to December 31st, 1889.—*Continued.*

Municipal Loan Fund.	Drainage Works rent charges.	Drainage Debentures.	Annuities.	Totals.	Years
$ c.	$ c.	$ c.	$ c.	$ c.	
.....	.....	.....	.....	182,899 63	1867
68,178 56	.....	.....	.....	2,250.207 74	1868
191,463 28	.....	.....	.....	2,625,179 29	1869
158,469 70	.....	.....	.....	2,500,695 70	1870
38,508 10	.....	.....	.....	2,333,179 62	1871
50,179 16	.....	.....	.....	3,060,747 97	1872
28,951 26	.....	1,125 60	.....	2,961,515 31	1873
831,909 33	.....	2,888 31	.....	3,446,347 93	1874
652,505 49	.....	10,444 58	.....	3,156,605 81	1875
113,444 44	16,211 71	27,406 05	.....	2,589,222 83	1876
.....	570 88	29,625 69	.....	2,502,566 04	1877
10,288 82	11,883 40	30,780 13	.....	2,285,178 07	1878
1,652 36	15,289 70	37,681 66	.....	2,287,951 39	1879
51,735 35	19,734 97	35,609 11	.....	2,584,169 76	1880
.....	9,029 27	41,997 80	.....	2,788,746 78	1881
.....	6,547 55	41,907 85	.....	2,880,450 40	1882
31 66	24,975 86	45,748 00	.....	2,439,941 42	1883
4,476 20	26,044 19	43,611 55	250,643 67	2,820,555 45	1884
2,647,96	18,079 29	37,100 54	271,399 69	3,005,920 71	1885
.....	18,523 17	44,502 97	238,842 57	3,148,660 01	1886
25,000 00	23,794 37	38,250 76	242,626 92	3,546,924 53	1887
4,000 00	15,041 52	29,185 51	.....	3,583,915 56	1888
850 00	17,486 76	39,019 83	.....	3,538,405 08	1889
2,234,291 67	188,824 54	536,885 9	1,003,512 85	62,519,987 03	Totals.

STATEMENT of Expenditure by the Treasurer of the Province

Years.	Civil Government.	Legislation.	Administration of Justice.	Education.	Public Institutions Maintenance.
	$ c.	$ c.	$ c.	$ c.	$ c.
1867	18,219 47	14,938 95	4,812 18	.....	.....
1868	90,959 62	85,949 18	171,995 81	331,582 20	152,936 19
1869	78,787 34	81,885 39	172,446 55	275,717 84	146,702 96
1870	104,909 35	37,487 87	180,004 02	315,887 92	157,925 80
1871	114,613 99	94,177 28	182,621 71	351,306 40	171,423 17
1872	142,218 85	99,559 42	191,647 66	421,703 53	214,967 89
1873	156,646 82	120,400 68	204,604 84	462,963 22	234,040 76
1874	159,180 49	176,289 79	208,373 36	487,444 80	286,088 12
1875	155,526 16	66,263 43	219,462 91	503,311 77	362,710 51
1876	155,365 59	106,940 56	286,591 40	524,493 51	368,046 02
1877	159,996 43	122,321 21	277,302 47	550,984 36	427,044 74
1878	158,721 64	126,463 03	295,369 52	556,056 84	482,466 76
1879	154,276 84	114,072 98	274,013 22	527,097 24	469,190 80
1880	173,732 67	111,585 44	265,070 31	505,104 86	505,598 41
1881	174,803 12	178,954 85	251,119 10	502 824 31	551,663 61
1882	190,739 55	165,016 04	262,731 46	511,268 48	608,387 17
1883	202,898 00	133,366 83	275,244 94	513,347 65	648,995 63
1884	179,825 23	141,440 28	331,026 69	531,651 00	600,216 15
1885	184,254 70	125,762 04	354,923 35	533,564 46	613,570 89
1886	183,049 56	115,612 22	346,641 16	568,112 13	609,228 66
1887	189,289 57	123,002 46	324,495 09	570,760 42	650,744 62
1888	200,685 25	127,030 77	373,898 80	579,443 80	721,602 69
1889	211,761 68	119,938 69	366,252 24	598,238 32	728,909 61
Totals	3,540,461 92	2,588,459 39	5,820,648 79	10,722,865 06	9,712,461 16

of Ontario from July 1st, 1867, to December 31st, 1889.

Immigration.	Agriculture and Arts.	Hospitals and Charities.	Repairs and Maintenance, Public Buildings.	Public Buildings.	Public Works.	Years.
$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	
.....	4,000 00	.....	.....	.....	.....	1867
.....	69,634 00	39,000 00	.....	125,846 29	.....	1868
17,595 00	71,151 41	44,000 00	.....	238,865 50	21,187 39	1869
32,087 65	68,072 20	42,510 00	.....	282,908 52	124,825 77	1870
29,712 56	76,277 90	40,260 00	.....	296,076 98	134,543 47	1871
57,750 49	81,612 10	42,100 00	.....	206,071 83	60,693 12	1872
159,178 55	82,817 93	43,020 00	.....	472,859 50	81,530 21	1873
134,640 66	86,438 24	43,020 00	.....	291,558 14	117,880 14	1874
94,060 53	94,444 83	52,346 16	.....	125,059 05	25.515 32	1875
45,201 10	97,348 42	65,495 07	.....	265,743 47	33,205 35	1876
46,265 34	97,234 55	64,151 48	.....	280,020 66	30,666 56	1877
31,975 09	97,028 62	70,673 19	.....	384,919 18	26,313 26	1878
39,650 12	105,900 80	73,720 44	.....	140,190 90	26,867 27	1879
52,982 19	107,282 72	72,832 63	.....	141,361 12	26,375 31	1880
34,826 37	106,936 01	78,092 75	.....	144,552 28	24,369 94	1881
30,414 67	131,182 53	78,095 79	.....	129,226 17	20,140 25	1882
47,764 41	139,725 95	80,600 53	.....	129,859 08	41,062 43	1883
43,369 92	195,362 64	94,218 83	70,149 91	235,517 24	27,717 40	1884
19,088 11	159,576 45	96,421 28	62,601 54	155,720 29	38,690 80	1885
16,837 40	125,712 06	103,416 19	57,650 91	227,893 19	51,763 07	1886
11,795 94	130,567 14	106,230 62	63,250 15	234,782 69	40,990 23	1887
7,952 39	139,054 46	113,686 14	69,229 54	291,423 56	42,870 71	1888
6,849 90	138,787 58	120,402 48	64,732 60	518,407 39	23,071 66	1889
959,998 39	2,406,148 54	1,564,293 58	387,614 65	5,318,863 03	1,020,279 66	

STATEMENT of Expenditure by the Treasurer of the Province of

Years.	Colonization Roads.	Charges on Crown Lands.	Refunds.	Statute Consolidation.	Miscellaneous.
	$ c.	$ c.	$ c.	$ c.	$ c.
1867	2,608 77	9,674 42	2,416 18		
1868	36,901 15	30,190 14	13,229 39		31,045 20
1869	35,589 94	46,341 69	183,341 01		27,261 78
1870	50,000 00	68,163 07	92,631 40		21,563 08
1871	55,409 04	46,306 94	186,241 25		37,813 42
1872	75,799 19	95,750 68	128,864 70		26,029 61
1873	145,950 00	110,491 66	168,848 52		16,859 54
1874	90,762 43	78,968 02	163,568 70		17,338 20
1875	103,511 89	67,249 89	107,669 78		86,418 38
1876	85,931 43	70,769 60	57,392 09		74,270 39
1877	77,300 00	78,469 56	103,428 63		81,937 75
1878	85,612 48	70,509 14	61,591 24		78,901 33
1879	114,564 13	67,776 17	53,421 26		124,539 93
1880	96,839 99	59,046 47	34,558 23		91,293 19
1881	97,289 80	67,592 98	42,207 85		43,820 24
1882	110,650 00	83,547 16	41,348 93		66,806 61
1883	123,497 47	67,131 26	40,960 29		103,717 15
1884	185,772 55	103,006 53	46,006 70		84,754 05
1885	121,435 32	96,573 08	31,023 41	2,339 65	97,980 53
1886	145,213 80	91,092 98	24,214 58	17,666 37	86,326 92
1887	122,974 78	94,538 80	24,729 21	27,759 27	148,802 97
1888	112,273 56	96,734 47	27,903 63	31,394 99	80,838 65
1889	103,666 63	101,775 68	18,024 87	781 97	60,013 63
Total	2,179,554 35	1,701,700 39	1,653,621 85	79,942 25	1,488,332 55

Ontario from July 1st, 1867, to December 31st, 1889.—*Continued.*

Aid to Railways.	Annuities.	Drainage Debentures—Municipal and Tile.	Drainage Works.	New Parliament Buildings.	Widows' Pensions.	Years.
$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	
.....	.....	.....	.....	.....	.....	1867
.....	.....	.....	.....	.....	.....	1868
.....	.....	.....	.....	.....	.....	1869
.....	.....	.....	.....	.....	.....	1870
.....	.....	.....	.....	.....	.....	1871
372,786 00	.....	.....	.....	.....	.....	1872
426,642 00	.....	53,949 22	.....	.....	.....	1873
113,812 90	.....	54,238 56	.....	.....	.....	1874
417,334 00	.....	81,736 30	55,660 03	.....	.....	1875
372,306 65	.....	24,809 95	53,443 78	.....	.....	1876
343,613 74	.....	49,243 25	11,425 96	.....	.....	1877
232,529 05	.....	34,496 45	590 40	.....	.....	1878
479,064 02	.....	86,602 39	.....	.....	.....	1879
182,032 48	.....	51,279 30	.....	4,150 07	.....	1880
205,523 37	.....	41,926 48	.....	112 00	.....	1881
254,445 82	.....	37,519 47	.....	1,342 19	2,347 14	1882
258,001 62	.....	31,294 83	.....	2,272 50	3,645 88	1883
253,783 41	6,700 00	71,998 04	1,600 00	.....	3,284 84	1884
250,808 01	20,400 00	40,223 78	.....	26 90	.....	1885
247,982 14	33,550 00	27,926 56	.....	8,119 44	.....	1886
247,982 14	45,950 00	30,166 39	.....	164,678 29	.....	1887
247,982 14	52,200 00	58,784 92	.....	159,203 23	11,041 15	1888
247,982 14	52,200 00	26,627 88	.....	143,167 35	1,764 07	1889
5,154,616 63	211,000 00	802,823 77	122,720 17	483,071 97	22,083 08	

STATEMENT of Expenditure by the Treasurer of the Province of Ontario from July 1st, 1867, to December 31st, 1889.—*Continued.*

Years.	Municipal Loan Fund Distribution.	Common School Fund—On account Quebec's share.	Land Improvement Fund—Held by the Dominion—Paid with interest to the Municipalities.	Stationery Office.	Totals.	Years.
	$ c.	$ c.	$ c.	$ c.	$ c.	
1867					56,669 97	1867
1868				3,118 86	1,182,388 03	1868
1869				3,735 03	1,444,608 83	1869
1870				1,686 56	1,580,663 21	1870
1871				82 67	1,816,866 78	1871
1872				3,187 50	2,220,742 57	1872
1873					2,940,803 45	1873
1874	1,361,101 59			788 68	3,871,492 82	1874
1875	986,243 48				3,604,524 42	1875
1876	452,151 28			1,121 99	3,140,627 65	1876
1877	317,711 04				3,119,117 73	1877
1878	108,171 15				2,902,388 37	1878
1879	65,765 76	25,000 00			2,941,714 27	1879
1880	22,061 41	15,000 00			2,518,186 80	1880
1881	8,182 22	25,000 00		5,251 08	2,585,053 36	1881
1882	57,458 73	25,000 00	111,158 79	1,334 10	2,920,161 05	1882
1883	9,071 70	25,000 00	9,579 58		2,887,037 73	1883
1884	150 00		338 26		3,207,889 67	1884
1885	154 48	35,000 00		5,973 81	3,046,112 88	1885
1886	377 51		93,062 84	259 31	3,181,709 00	1886
1887	177 12	100,000 00	704 53		3,454,372 43	1887
1888					3,545,234 85	1888
1889					3,653,356 37	1889
Total	3,388,777 47	250,000 00	214,844 00	26,539 59	61,821,722 24	

STATEMENT of Expenditure by the Treasurer of the Province of Ontario, from July 1st, 1867, to December 31st, 1889.—*Continued.*

Notes *re* Expenditure:

Education Office Salaries and Expenses under Education	1867-78
do do Civil Government	1879-89
School of Science, Salaries and Expenses under Public Institutions Maintenance	1872-83
do do Education	1884-89
Mechanics' Institutes, etc., under Agriculture	1868-85
do do Education	1886-89
Expenses of Elections under Legislation	1868-74
do do Miscellaneous	1875-89
Agricultural College and Farm under Public Institutions Maintenance	1873-83
do do Agriculture	1884-89
Repairs, etc., Public Buildings under Departmental Expenses	1867-83
Consolidation of Statutes under Miscellaneous	1874-85
Drainage Works under Miscellaneous	1868
do Public Works	1869-74

PROVINCE OF ONTARIO RAILWAY SCRIP.

STATEMENT shewing the amounts still to be paid on Railway Aid Certificates issued by the Province, with the dates when the same become due and payable; also specifying the proportion of principal and interest of the different payments, together with an estimate of the present value of the said Railway Aid Certificates.

DATE PAYABLE.	AMOUNT.	PROPORTION OF PRINCIPAL.	PROPORTION OF INTEREST.
	$ c.	$ c.	$ c.
1890 June 30	123,991 07	120,379 64	3,611 43
1890 Dec. 31	123,991 07	116,873 43	7,117 64
1891 June 30	123,991 07	113,469 37	10,521 70
1891 Dec. 31	65,712 22	110,164 40	13,826 67
1892 June 30	65,712 22	56,683 95	9,028 27
1892 Dec. 31	65,712 22	55,032 90	10,679 32
1893 June 30	65,712 22	53,430 07	12,282 15
1893 Dec. 31	65,712 22	51,873 82	13,838 40
1894 June 30	65,712 22	50,362 96	15,349 26
1894 Dec. 31	65,712 22	48,896 07	16,816 15
1895 June 30	65,712 22	47,471 89	18,240 33
1895 Dec. 31	65,712 22	46,089 23	19,622 99
1896 June 30	63,208 12	43,041 69	20,166 43
1896 Dec. 31	63,208 12	41,788 01	21,420 11
1897 June 30	52,932 19	33,975 15	18,957 04
1897 Dec. 31	52,932 19	32,985 60	19,946 59
1898 June 30	38,675 69	23,399 42	15,276 27
1898 Dec. 31	38,675 69	22,717 90	15,957 79
1899 June 30	31,459 49	17,940 90	13,518 59
1899 Dec. 31	31,459 49	17,418 36	14,041 13
1900 June 30	28,422 99	15,278 75	13,144 24
1900 Dec. 31	28,422 99	14,833 76	13,589 23
1901 June 30	12,520 28	6,343 93	6,176 35
1901 Dec. 31	12,520 28	6,159 15	6,361 13
1902 June 30	4,441 48	2,121 28	2,320 20
1902 Dec. 31	4,441 48	2,059 49	2,381 99
1903 June 30	415 29	186 96	228 33
	1,485,397 81	1,150,978 08	334,419 73

Present value of outstanding Certificates.....$1,150,978 08

PROVINCE OF ONTARIO—ANNUITY CERTIFICATES.

STATEMENT shewing the amounts still to be paid on Annuity Certificates issued by the Province, with the dates when the same become due and payable. Also specifying the proportion of principal and interest of the different payments, together with an estimate of the present value of the said Annuity Certificates.

DATE PAYABLE.		AMOUNT.	PROPORTION OF PRINCIPAL.	PROPORTION OF INTEREST.
		$ c.	$ c.	$ c.
1890	June 30	26,100 00	5,635 23	20,464 77
	Dec. 31	26,100 00	5,756 69	20,343 31
1891	June 30	26,100 00	5,880 84	20,219 16
	Dec. 31	26,100 00	6,007 69	20,092 31
1892	June 30	26,100 00	6,137 25	19,962 75
	Dec. 31	26,100 00	6,269 57	19,830 43
1893	June 30	26,100 00	6,404 82	19,695 18
	Dec. 31	26,100 00	6,542 99	19,557 01
1894	June 30	26,100 00	6,683 99	19,416 01
	Dec. 31	26,100 00	6,828 23	19,271 77
1895	June 30	26,100 00	6,975 37	19,124 63
	Dec. 31	26,100 00	7,125 81	18,974 19
1896	June 30	26,100 00	7,279 61	18,820 39
	Dec. 31	26,100 00	7,436 48	18,663 52
1897	June 30	26,100 00	7,596 97	18,503 03
	Dec. 31	26,100 00	7,760 94	18,339 06
1898	June 30	26,100 00	7,928 11	18,171 89
	Dec. 31	26,100 00	8,099 14	18,000 86
1899	June 30	26,100 00	8,273 92	17,826 08
	Dec. 31	26,100 00	8,452 24	17,647 76
1900	June 30	26,100 00	8,634 58	17,465 42
	Dec. 31	26,100 00	8,820 79	17,279 21
1901	June 30	26,100 00	9,011 02	17,088 98
	Dec. 31	26,100 00	9,205 39	16,894 61
1902	June 30	26,100 00	9,403 93	16,696 07
	Dec. 31	26,100 00	9,606 96	16,493 04
1903	June 30	26,100 00	9,814 01	16,285 99
	Dec. 31	26,100 00	10,025 67	16,074 33
1904	June 30	26,100 00	10,241 95	15,858 05
	Dec. 31	26,100 00	10,462 87	15,637 13
1905	June 30	26,100 00	10,688 73	15,411 27
	Dec. 31	26,100 00	10,919 16	15,180 84
1906	June 30	26,100 00	11,154 88	14,945 12
	Dec. 31	26,100 00	11,395 33	14,704 67
1907	June 30	26,100 00	11,641 20	14,458 80
	Dec. 31	26,100 00	11,892 49	14,207 51
1908	June 30	26,100 00	12,148 84	13,951 16
	Dec. 31	26,100 00	12,410 93	13,689 07

ANNUITY CERTIFICATES—STATEMENT, ETC.—*Continued.*

DATE PAYABLE.	AMOUNT.	PROPORTION OF PRINCIPAL.	PROPORTION OF INTEREST.
	$ c.	$ c.	$ c.
1909 June 30	26,100 00	12,678 70	13,421 30
1909 Dec. 31	26,100 00	12,952 24	13,147 76
1910 June 30	26,100 00	13,231 71	12,868 29
1910 Dec. 31	26,100 00	13,517 12	12,582 88
1911 June 30	26,100 00	13,808 85	12,291 15
1911 Dec. 31	26,100 00	14,106 70	11,993 30
1912 June 30	26,100 00	14,411 09	11,688 91
1912 Dec. 31	26,100 00	14,722 01	11,377 99
1913 June 30	26,100 00	15,039 67	11,060 33
1913 Dec. 31	26,100 00	15,364 18	10,735 82
1914 June 30	26,100 00	15,695 66	10,404 34
1914 Dec. 31	26,100 00	16,034 46	10,065 54
1915 June 30	26,100 00	16,380 35	9,719 65
1915 Dec. 31	26,100 00	16,733 92	9,366 08
1916 June 30	26,100 00	17,094 84	9,005 16
1916 Dec. 31	26,100 00	17,463 57	8,636 43
1917 June 30	26,100 00	17,840 62	8,259 38
1917 Dec. 31	26,100 00	18,225 68	7,874 32
1918 June 30	26,100 00	18,618 86	7,481 14
1918 Dec. 31	26,100 00	19,020 71	7,079 29
1919 June 30	26,100 00	19,431 19	6,668 81
1919 Dec. 31	26,100 00	19,850 44	6,249 56
1920 June 30	26,100 00	20,278 81	5,821 19
1920 Dec. 31	26,100 00	20,716 47	5,383 53
1921 June 30	26,100 00	21,163 66	4,936 34
1921 Dec. 31	26,100 00	21,620 27	4,479 73
1922 June 30	26,100 00	22,086 89	4,013 11
1922 Dec. 31	26,100 00	22,563 53	3,536 47
1923 June 30	26,100 00	23,050 33	3,049 67
1923 Dec. 31	26,100 00	23,547 90	2,552 10
1924 June 30	26,100 00	24,055 98	2,044 02
1924 Dec. 31	19,400 00	17,875 50	1,524 50
1925 June 30	19,400 00	18,255 16	1,144 84
1925 Dec. 31	12,400 00	11,642 90	757 10
1926 June 30	12,400 00	11,890 12	509 88
1926 Dec. 31	6,250 00	5.992 61	257 39
1927 June 30	6,250 00	6,119 97	130 03
		949,637 29	927,362 71
			949,637 29.
			1,877,000 00
Present value of outstanding Certificates			$949,637 29

NOTE.—These calculations have been made by Mr. W. S. Andrews, Accountant North of Scotland Canadian Mortgage Company, and author of Andrews' Valuation Tables, and are calculated at the rates of interest at which the Certificates and Annuities were issued.

(No. 86.

Return to an Order of the House of the twenty-eighth day of February, 1890, shewing the number of Shop and Tavern Licenses granted to persons resident in Killarney in each of the years 1888 and 1889, and the names of the persons to whom they were respectively granted. Also, for copies of all petitions for or against the granting of such licenses or any of them, and of all corespondence between the head, or any officer of the License Branch of the Department of the Provincial Secretary, and any other person on the subject of the granting or working of such licenses, or any of them, and shewing also, the population of Killarney duaing the same years. Presented to the Legislature 2nd April, 1890. *Mr. Meacham.* (*Not printed.*)

REPORT

ON THE

BASIN OF MOOSE RIVER

AND

ADJACENT COUNTRY

BELONGING TO THE

PROVINCE OF ONTARIO.

By E. B. BORRON, Esq.,
Stipendiary Magistrate.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

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1890.

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COLLINGWOOD, October 1, 1890.

Hon. O. MOWAT,
Attorney-General, etc., etc.,
Toronto.

SIR,—I have the honour to transmit herewith my report for last year, on the northerly part of the Province.

In it the result of the explorations for lignite coal, carried out under instruction from the Honourable the Commissioner of Crown Lands, and my opinion in reference thereto, as well as to other minerals in the territory are given at considerable length.

I have also quoted largely from former reports, information on other subjects, which (now that the boundary question has been happily settled) may possess a new and greatly increased interest for many, while some of these subjects it is desirable to bring again under the notice of the Government.

I have the honor to be,
Sir,
Your most obedient servant,

E. B. BORRON,
Stipendiary Magistrate.

REPORT OF

E. B. BORRON,

STIPENDIARY MAGISTRATE,

ON

THE BASIN OF MOOSE RIVER

AND ADJACENT COUNTRY BELONGING TO THE

PROVINCE OF ONTARIO.

The claim of the Province to this territory—so long and obstinately contested—having been fully established, many persons who have heretofore taken little interest in it will now probably be anxious to learn all they can in reference to the extent, resources and value of the country.

This desire may, in the opinion of the writer, be most fully satisfied by embodying in the present report the principal facts and opinions contained in previous reports by himself and others, no longer accessible to the public generally, together with such additional information and suggestions as recent explorations may enable him to afford, or which the confirmation of the title of the Province may now appear to demand.

Boundaries and Area.

The boundaries of the territory which forms the subject of this report may be briefly described as follows: Commencing at a point on the height of land where a line running due north from the head of lake Temiscaming intersects the dividing ridge or water parting, it follows this watershed in a west north-westerly direction to a point near the head of lake St. Joseph. The distance between these two points is about 500 miles in a straight line, but probably not less than 650 miles if the watershed or "divide" itself be followed. This forms the whole of the southern and for the most part the western boundary also of this territory. From the point last mentioned lake St. Joseph and the Albany river constitute the northern and to a limited extent the western boundary. The distance from the head of lake St. Joseph to Albany Factory at the mouth of the river is about 400 miles direct, or say 475 miles, roughly estimated, by the river. From Albany Factory the coast of James' Bay is followed to a point where a line produced due north from the place of beginning will strike James' Bay. This coast line completes the northern and forms to some extent the eastern boundary. The length is probably little short of 200 miles, but measured straight from point to point it will not exceed 130 or

140 miles, so far as can be judged from the somewhat imperfect maps we have of the territory. From the last mentioned point (which is expected to fall about midway between Hannah Bay and Rupert's Bay) to the height of land the line will, when surveyed, run due north and south and form with the coast the eastern boundary of the territory. The length of this line will not probably be less than 200 miles, or more than 220 miles.

As regards the area of this northern territory, the form as well as boundaries are so irregular, and the lengths of the lines so uncertain, that it is not possible to estimate it with any near approach to accuracy. I believe, however, that it will turn out to be not less than seventy-five thousand square miles.

On this subject it may be well to quote from a report on "North-western Ontario: Its Boundaries, Resources and Communications," prepared under instructions from the Ontario Government, and printed in 1879. This, as will be seen, was soon after the award of the arbitrators, determining the boundaries, had been made, and which it was then expected would have been final.

In this report will be found on pp. 1, 2 and 3 the following on the subject of the boundaries, etc. "The question of boundary set at rest by the award, had been the subject of much laborious investigation. The Dominion Government contended that the northern boundary of Ontario was the height of land forming the watershed of the St. Lawrence and great lakes, and skirting, at a distance varying from fifteen to fifty miles, the northern shores of lakes Superior and Nepigon. The western boundary, it was contended was to be ascertained by a line drawn due north from the confluence of the Ohio and Mississippi rivers, and which was found to be in longtitude 89° 9′ 27″ west. Such a line would have intersected Thunder bay, divided the existing settlement on its shores, alienated from Ontario a large district, including the village of Prince Arthur's Landing, the population gathering round Fort William, the site of the projected terminus of the Canadian Pacific railway, and the townships of Blake, Crooks, Pardee, Paiponge, Oliver, Neebing and McIntyre, already under Ontario jurisdiction, and left within the Province only a narrow strip north of the lakes and south of the height of land. Opinions were divided as to the rights of the Province beyond the boundaries contended for in behalf of the Dominion, but it will probably be found that the decision of the arbitrators is, on the whole, consistent with equity, convenience, and public policy. The award declares that the following are and shall be the boundaries of the Province of Ontario, namely:—"Commencing at a point on the southern shore of Hudson Bay, commonly called James' Bay, where a line produced due north from the head of lake Temiscamingue would strike the said south shore, thence along the said south shore westerly to the mouth of the Albany river, thence up the middle of the said Albany river, and of the lakes thereon to the source of the said river, at the head of lake St. Joseph, thence by the nearest line to the easterly end of Lac Seul, being the head waters of the English river, thence westerly through the middle of Lac Seul and the said English river to a point where the same will be intersected by a true meridional line drawn northerly from the international monument placed to mark the most north-westerly angle of the Lake-of-the-Woods by the recent Boundary Commission, and thence due south following the said meridional line to the said international monument, thence southerly and easterly following upon the international boundary line between the British possessions and the United States of America into lake Superior. But, if a true meridional line drawn northerly from the said international boundary at the said most north-westerly angle of the Lake-of-the-Woods shall be found to pass to the west of where the English river empties into the Winnipeg river, then and in such case the northerly boundary of Ontario shall continue down the middle of the said English river to where the same empties into the Winnipeg river, and shall continue thence in a line drawn due west from the confluence of the said English river with the said Winnipeg river until the same will intersect the meridian above described and thence due south following the said meridional line to the said international monument, thence southerly and easterly following upon the international boundary line between the British possessions and the United States of America into lake Superior.

"The district included within these boundaries is of equal if not of greater area than the whole of the rest of Ontario, exclusive of the lakes Ontario, Superior, Huron and Erie. Omitting those lakes, the Province within the limits embraced in the proposition of the Dominion, contained about 64,000,000 acres, or 100,000 square miles of territory. From the Quebec boundary line—from lake Temiscamingue to James' Bay—to the Lake-of-the-Woods, the distance cannot be much less than seven hundred miles; while, measured from north to south, the new territory covers a breadth of country varying from over three hundred to one hundred miles. The Province of Ontario will consequently, in future, possess an area of fully 200,000 square miles. This is 80,000 square miles greater than the area of the United Kingdom; only 12,000 square miles less than the whole German Empire; only 2,000 square miles less than France, and equal to the combined areas of Holland, Portugal, United Italy, Switzerland, and Belgium. The awarded territory alone possesses an area greater by 20,000 square miles than the group of countries just named, excepting Italy.*"

The height of land on which this water parting is situated is not, as many naturally suppose, a chain of mountains with sharp, well-defined ridges, dividing the waters which flow south from those flowing towards the north. It is really a table land or plateau, the elevation of which varies from eight or nine hundred to sixteen or seventeen hundred feet above the level of the sea, and averages probably about twelve hundred feet. The width of this plateau in a northerly direction is nearly a hundred miles in some places; and including that portion lying to the south of the water parting or divide will average, I think, as much as seventy miles.

The length, in a direct line from the point before referred to as lying due north of lake Temiscaming, to the head of lake St. Joseph, being about five hundred miles, it follows that the area of the plateau included between these two points is not less than 35,000 square miles. The water parting or "divide" is generally nearer to the southern than to the northern edge of this height of land plateau, and the probability is that two-thirds of it are situated on the northern slope or side, and included in the territory which is the more immediate subject of this report.

Topography.

To render more intelligible the description of the leading physical features of this vast territory, it has been represented in former reports as naturally divided into three tolerably well-defined belts or zones, namely:—

1st. The southerly or height of land plateau. A table land chiefly remarkable for the number of its fresh water lakes.

2nd. The intermediate plateau or belt. Notable for the falls and rapids in all the rivers by which it is crossed in their course from the height of land plateau to James' Bay.

3rd. The northerly or coast belt. A plain or flat country, largely overspread with 'muskegs" or peat-mosses; almost treeless excepting near the rivers, and extending from the foot of the last great falls or rapids on the northern edge of the intermediate belt to the coast of James Bay.

The fundamental rocks in the two first divisions are Laurentian and Huronian, and in the last, stratified or flat rocks belonging to the Devonian, Silurian or Cambrian systems.

In quoting from former reports on this territory it may be that some of the views and opinions expressed in the earlier reports have been modified or changed in subsequent ones. Such discrepancies as are observed, and appear of sufficient importance, will be specially noticed. Others, however, will doubtless pass unobserved. In all which cases the later expressions of opinion, being founded on a larger knowledge and experience of the territory, will be entitled to the greatest weight.

"* Mr. Devine, Deputy Surveyor-General of Ontario, gives 97,000 square miles as a rough approximate estimate of the area of the awarded territory. Other authorities, however, consider 120,000 to 140,000 square miles to be its probable extent."

In the first report I had the honor to submit on this territory was embodied such information as I had been able to gather on a hurried trip going to Moose factory, during three months of a sojourn there, and on a still more hurried return trip back again to lake Huron.

The route followed when going may be said to have commenced at the mouth of the French river. Ascending this river to lake Nipissing and crossing the height of land between that lake and the Ottawa valley we struck the head waters of the Mattawa and descended that stream until we came to the Ottawa river. Here the route, which had heretofore been for the most part easterly, turned northward up the Ottawa river and through lake Temiscamingue to the head thereof. At this point the country rises abruptly, and on again entering and ascending the river no fewer than fifteen portages occur in about as many miles. These are known to voyageurs as "The Quinzes," and in this stretch the upward course is easterly. Above the last of these rapids Lac des Quinzes was entered, and we may be said to have now reached the southern edge of the Height of Land plateau. While the main Ottawa river—the source of which is upwards of 200 miles to the east—flows into the eastern arm of this lake, our route took us up the northern arm, and thence through a chain of lakes for some fifty miles or more in a northerly direction to the water parting or Height of Land portage. Crossing this we struck a chain of lakes in which the Abittibi river takes its rise. Passing through these lakes and connecting stretches of river, still in a northerly direction, the route led us out into lake Abittibi near its eastern extremity. Thence it pursues a westerly course through the Upper and Lower Abittibi lakes, and down the main Abittibi river to the junction of Black river, a distance of at least 50 miles in a direct line, and of 75 miles by the canoe route. Below this junction the Abittibi river, which we still continued to follow, maintains, with the exception of one westerly bend of some ten miles in length immediately above the junction of Frederick House river, a northerly course to where it joins the main Moose river. From this point the Moose river was descended about seventeen miles to Moose Factory. Moose Factory is situated upon an island at the mouth of the river, and is the principal fur-trading post and depot of the Hon. Hudson's Bay Company in this department.

Returning, I took what is known as "the Michipicoten route." On this route the Moose River and its north-west branch, the Missinaibi River, are ascended to the Height of Land portage, between Crooked Lake, the source of the Missinaibi, and Mattagaming or Dog Lake, the source of Michipicoten River. Crossing over this portage the route passes through the lake just referred to and down Michipicoten River to Lake Superior. There near its outlet the Hon. Hudson Bay Company have another establishment known as Michipicoten, or Michipicoten Post, from which to Sault Ste. Marie the distance is about 120 miles by water.

Extracts from Report of 1879 regarding the Height of Land Plateau, etc.

In this Report, printed by order of the Legislative Assembly in 1880, the leading physical features of the country as they appeared to me at that time are described as follows :—

"The southern boundary of this territory, generally known as the "Height of Land," is not a continuous chain of mountains, but rather of the nature of a plateau of moderate elevation and considerable breadth. The height varies from nine hundred to seventeen hundred feet above the level of the sea. The lowest point is, I think, where it is crossed by the canoe route to Moose Factory *via* Temiscaming and Lake Abittibi. The breadth of this plateau is exceedingly variable, but I should say that it would average fifty or sixty miles, if not more. The geological formation is Laurentian and Huronian, but for the most part Laurentian. It abounds, so far as I am able to judge, with lakes, marshes and rocky ridges. These ridges are of no great elevation, and rarely continuous for any considerable distance. Here and there isolated hills may be seen rising above the common level to a height apparently of five or six hundred feet, but these are not numerous.

"Many of the lakes on this plateau, which extends a great distance both east and west of this territory, are of considerable size. Among others, Lac Seul, Lakes St. Joseph, Nipigon, Long, Missinaibi, Mistassinnie and Abittibi may be specially mentioned. So numerous, indeed, are the lakes on this height of land, that it is my impression that it would be quite possible, with a canoe, to voyage or travel on the lakes and their connecting streams on this plateau from Lake Winnipeg to Hamilton Inlet on the coast of Labrador, without approaching either the great lakes on the south or Hudson's Bay on the north. Nor would any very long portages, I think, be necessary. When we consider that the two points named are separated by some forty degrees of longitude, and distant about one thousand eight hundred miles from each other, some faint idea may be formed of this "region of lakes," and of the enormous volume of fresh water stored up, so to speak, on this height of land.

"In the lakes on this plateau almost all the rivers, whether flowing north or south, would appear to have their origin. Six of these, namely: the Albany, Moose, Abittibi, Harricanaw, Rupert's and East Main, having their sources on this plateau nearly a thousand miles apart, converge to such a degree that they pour their waters into the southern extremity of James' Bay, within a comparatively short distance of each other. If, at or around a point in the neighbourhood of Charlton Island, a circle could be described, the mouths of all these rivers would fall within a radius of little more than sixty miles. This territory may be truly said, therefore, to be a portion of the basin of Hudson's Bay.

"Of the rivers just named, the Albany, Moose, Abittibi and Harricanaw flow wholly or in part through this territory.

"The shores of James' Bay, from the eastern boundary to the Albany river, are low and flat, and the bay is exceedingly shallow. I have been informed that no soundings of any considerable depth can be had even in the Hudson's Bay itself.

"The Albany river is the largest river in the territory. All are navigable for boats capable of carrying five or six tons for a considerable distance from the coast. The Abittibi is ascended, with some difficulty, about seventy miles; the South Moose or Mattagami, ninety miles: the North Moose or Missinaibi, one hundred and twenty-five miles; and the Albany river is said to be navigable in like manner from James' Bay to Martin's Falls, a distance of about two hundred and fifty miles. These facts indicate the existence of a belt or zone of unbroken country extending, from the coast of James' Bay, far into the interior. The breadth of this belt would appear to increase from the eastern boundary of this territory, where it is probably not more than fifty or sixty miles in width, to Martin's Falls, on the western boundary, where it would appear to be upwards of two hundred. The geological formation or rock underlying the whole of this section of the country is most likely fossiliferous limestone of the Devonian Age.

"Intervening between this flat region and the plateau on the height of land previously described, is a belt of country characterized by the number of rapids and falls met with on all the rivers by which it is intersected. These rapids and falls are occasioned by low ridges of Huronian and Laurentian rock, which cross the rivers, and through which they have in some instances cut, and in others are still engaged cutting deep channels for themselves. The prodigious amount of work performed is manifested, not only by the depth and length of the chasms already excavated, but by thousands of boulders thickly strewn along the beds and on the banks of these rivers from where they leave the height of land to James' Bay. These boulders, mostly of Laurentian rock, are of all sizes, some of them being at least fifty tons in weight.*

"This belt of country, judging from what is seen on the Abittibi and Moose rivers, varies from about seventy to eighty miles in width.

"Thus this territory is naturally divided into three tolerably well defined belts or zones.

"1st. The plateau on the height of land, remarkable for its lakes;

"2nd. The intermediate belt, or "steppes," remarkable for its rapids and falls;

* Subsequent examination has convinced the writer that most of these boulders have come from the north and are of glacial origin.

"3rd. The flat or level country, extending from the coast of James' Bay southerly to where the "steppes" of the second or intermediate belt begin.

"I did not see a single mountain, or even what I would consider a hill, in the whole of the two last sections of this territory. If there be any such I think that they will be found near the eastern boundary.

"Another feature is the slight depth to which the rivers have worn out channels for themselves below the general surface of the country, unlike those in our North-West Territories, the beds of which are described as frequently two or three hundred feet below the general surface of the prairies. This is owing, doubtless, to the greater hardness of the underlying strata in this territory, but is to be regretted as being, on the whole, unfavourable to good natural drainage. The Moose and Albany rivers are greatly swollen on the melting of the snow in spring; and the occurrence of what are called "ice-jams" at that period may cause the waters to rise much above their ordinary level. Both Moose Factory and the Post at Albany are liable to suffer from inundations at this particular time, but at no other.

"The principal settlement in the territory is at Moose Factory.

"Moose Factory is situated upon an island in the estuary formed by the Abittibi and Moose rivers. Although these rivers become one stream some seventeen or eighteen miles above Moose Factory, the waters do not appear to mingle, those of the Abittibi keeping on the eastern and those of the Moose on the Western side until both are lost in James' Bay. Moose Island is nearly two miles in length and from one-half to three-quarters of a mile in breadth and the area may be about a thousand acres. It is almost perfectly level or flat and elevated from fifteen to twenty feet above low water mark. The river at this point is upwards of two miles in width.

"The settlement is on the south-east side of the island and occupies a strip of land on the bank of the river about three-quarters of a mile in length. On this, stationed at intervals to lessen the risk of total destruction by fire, are the offices, houses, stores, warehouses, mechanics' shops, and some twenty-five or thirty cottages for the servants of the Hudson's Bay Company. They are all good, substantial wooden buildings. There is a neat little Episcopal Church, a parsonage and small school-house. These, with forty or fifty tents usually to be seen here during summer, present altogether a rather pleasing appearance. The population is about 450 souls in the summer, but not more than 150 in the winter season."

Extracts from Report of 1880 regarding the Coast of James' Bay.

My second report (printed in 1881) gave the results of my explorations in 1880. These were chiefly confined to the third belt or great plain on the coast of James' Bay. In the course of these explorations, as will be seen in the Diary or Narrative appended thereto, the writer discovered and was, he thinks, the first to note the existence of inexhaustible beds of peat, which, in the form of "mosses" or "bogs," over-spread the greater part of this flat country.

The following remarks are quoted from p. viii. *et sequentia* of this report:—

"The traveller visiting Moose Factory for the first time, following the usual routes, and seeing only so much of the country as may be visible from his seat in a canoe, is almost certain to form too favourable an opinion of the character and resources of the territory north of the Height of Land. The fertility of the soil, the size and healthiness of the timber, and the luxuriance of the native grasses, as seen in many places on the banks of the rivers, inevitably tend to the belief that this is the general character of at least the adjacent land. A more thorough examination of the region thus travelled through has convinced me that the quantity of arable land fit for settlement is not nearly so great as I had supposed it to be. Those who have read the preceding narratives of my explorations this season cannot fail to have perceived that the fertile appearance of the land on the immediate banks of the rivers is very delusive and misleading. Over and over again it must have been noticed that on going inland at those points where on

the banks of the rivers the soil and timber presented the most promising appearance, we found that the ground became wetter and wetter, that sphagnum moss covered the surface to a greater and greater depth, and that generally in less than half a mile we came to where peat had been formed; that as these peat-mosses increased in depth, first the poplar, aspen and birch would give place to spruce, and to what is called in this country juniper or tamarack; and secondly, these last would diminish in size until they were little more than mere shrubs thinly scattered over the widespreading surface. Nor were these trees healthy wherever the peat had attained to any considerable thickness. On the contrary they were not only stunted but scrubby, and frequently dead. They were draped, too, with a species of parasitic hair-moss of a gray or black colour, which hung in long dishevelled tresses from the dead and dying branches, and imparted to the whole scene a most dismal and funereal appearance.

"The expeditions I made from Moose Factory—first up the Jig-a-wa river into the heart of the region lying between the Moose and Albany rivers, and secondly up the Abittibi river to New Post, through the region lying on the eastern side of Moose river, as well as my explorations along the coast of James' Bay are conclusive, I think, as to the vast extent of these peat-mosses, if not their almost universal prevalence in the flat belt of country bordering on the southern extremity of James' Bay.

"As a consequence of this, the areas available or fit for agriculture or stock-raising, are less than I had anticipated. Deducting the land overspread by peat-mosses, that which is swampy or marshy, and that again, which although possessed of a good soil, is liable to be flooded, and a comparatively small amount of good arable land fit for settlement will, I fear, remain.

"The cause of this is owing partly to the climate and partly to the soil, but chiefly to the physical conformation of the country. The coldness and humidity of the climate favour the growth of the deadly sphagnum or bog-moss, the constant decay and reproduction of which produces peat, the beds of which increase yearly in depth or thickness, until all the higher forms of vegetable life succumb. No matter how rich the now, buried soil may have been, or the magnificence of the forests it may once have borne, or the description of timber, whether spruce, pine, birch or poplar, of which those forests may have been composed, the giants of the forest perish in the struggle for existence with an apparently insignificant plant and their remains are entombed in the peat along with the soil which gave them birth. The vestiges of former forests are frequently, I might say generally, found in the peat-mosses of the mother country and northern Europe, and I have no doubt that when our peat-beds come to be worked similar remains will be found in them.

"The climate, however, would not of itself sufficiently account for this general prevalence of peat-mosses. The wetness of the land is another, and perhaps the most important factor, for moisture specially favours the growth of the sphagnum, which generates, so to speak, the peat.

"The soil in this zone or belt is either clay or underlaid by clay at no great depth. When nearly level or flat, as it is in this case, experience proves that such land is always wet.

"Again, the conformation of the country is not such as to afford good natural drainage. Had the character of the country been "rolling" or "hilly," or even mountainous, the proportion of dry arable land would undoubtedly have been greater and that of the peat-mosses much less. But this portion of the basin of the Hudson's Bay is essentially a plain, as much so indeed as any part of the western prairies, the principal difference consisting in the fact of the one being covered with sphagnum and peat-mosses, the other with grass and vegetable mould.

"If the climate north of the Height of Land had been as dry, and the summer heat as great as on the western plains, I am inclined to think that we might have had in our territory very extensive prairies. Even if the sphagnum or bog-moss were as vigorous, which it would not be under such circumstances, and supposing it to have got a pretty strong hold of the soil, the occurrence of fires during the hot and dry seasons would most

likely destroy it and so liberate the soil and permit the grass to grow again. Still, in all probability, peat-mosses would have overspread the wetter portions of the territory.

"This plain emerges from beneath the waters of James' Bay and stretches to the south with a gentle and seemingly regular inclination, which I think is rarely less than three or more than five feet in a mile. The plain becomes much wider towards its southern boundary than it is on the coast. I have not seen the western side of this plain, but consider that its width, one hundred miles from James' Bay, must be at least double what it is on the coast. The increased width is chiefly in a south-westerly direction.

"The southern boundary or margin of this plain is constituted by ridges of metamorphic rock, on approaching which the Devonian strata, which underlie the plain, crop out, and the country rises some three or four hundred feet, generally in less than twenty miles. This rise commences at the Otters' Rapid on the Abittibi river, at the Grand Rapid on the Mattagami or South Moose, at the Long Portage on the Missinaibi or North Moose river, and at or about Martin's Falls, I believe, on the Albany river.

"Judging from what I have seen of this great plain, I should say that at least three-fourths of all the loose material or soil overlying the Devonian limestone consisted of clay. The clay is of various kinds, differing in colour, composition and probably origin, and often there may be more or less sand or gravel not only mixed with the upper clays but resting on them, but the far greater portion of both soil and sub-soil is undoubtedly clay. In some places, however, there are heavy banks—ridges and beds of sand—but these always, I think, repose on clay. These superficial deposits are, in some places, not less than one hundred feet in thickness.*

"Through these over-lying deposits of clay, the rivers descending from the Height of Land have worn or cut out channels. These channels or river courses are not, properly speaking, valleys, but wide and shallow troughs, rarely more than one hundred feet below the general surface. These troughs are in many places very much wider than necessary to carry off the water, even in the spring when, owing to the rapid thawing of the snow which has fallen and accumulated on the ground during the winter season, the quantity of water is vastly increased.

"The tendency of these bottoms is to become wider, owing to the wearing action of the waters of the rivers on the clay banks, one or other of which it is generally undermining and carrying away.

"It is probable that the course of the rivers and their depth below the general surface are determined, the first by the dip of the underlying limestone, and the second by the depth or thickness of the overlying clay. Those portions of these river bottoms which are elevated more or less above the ordinary summer level of the water, possess generally a good alluvial soil, but are low-lying and frequently swampy. They are mostly covered with a growth of timber of some sort, its description being determined by climate, soil, wetness and other like conditions. I saw little or no peat on these bottoms. My impression is, that wherever the land is inundated by the spring freshets, the alluvium or mud brought down and deposited by the water, either destroys the sphagnum moss or so fertilizes the ground as to favour the growth of a higher order of plants.

"The depth of the main rivers below the adjacent surface of the country, being thus inconsiderable, it necessarily follows that their tributaries, although numerous, are short and generally insignificant. The only exception would seem to be in respect of those tributaries which have their sources also on the Height of Land, and pursuing their course northward as independent rivers, fall, as it were, accidentally into the larger rivers, owing to a general convergence of all the rivers as they approach James' Bay.

"The smaller tributaries, if followed up, will be found almost invariably to have their origin in the peat-mosses, from under which the water, unable to sink into the underlying clay, is oozing or springing out everywhere parallel to and at only a short distance from the larger rivers. Thus it would appear that while there may be a fringe along the banks of the large rivers and their principal tributaries more or less drained

* Two hundred feet in some places.

and fertile, by far the greater portion of this great plain has no natural drainage what ever in the proper sense of the term. That this plain is in general sufficiently elevated above the rivers and water-courses to admit of artificial drainage is unquestionable, and that vast areas of land will be reclaimed and rendered fertile by the ingenuity and labour of man at some future day, I have not the shadow of a doubt.

"The reclamation of peat-mosses or peat-bogs, however, is a slow and costly operation, and has been in some instances a far from profitable enterprise even in the mother country, with all the advantages of abundant capital, cheap labour and the best of markets for the produce of such land as might be reclaimed. There are hundreds of thousands, if not millions, of acres of such peat-mosses or bogs still unreclaimed in Ireland and Scotland. Even in the very heart of Lancashire, one of the wealthiest and most populous counties of England, there was when I was a boy a moss called Chat-moss, which covered some twelve square miles, and the reclamation of which, if entirely completed, can only have been completed quite recently. I have reason to know somewhat of the difficulty of reclaiming such peat-mosses, for the late Mr. Roscoe, of Liverpool, and my father were among the first to engage extensively in the operation of reclaiming Chat-moss, an undertaking in which both spent a great deal of money and which was continued by my father many years after Mr. Roscoe's death. Knowing this, I must confess to a feeling of disappointment, when time after time on penetrating inland I came to these interminable, dismal looking peat-mosses, where I had hoped to find at least prairie-like pasture, if not good arable land.

"Situated to the south of this flat belt or region, and intermediate between it and the plateau on the Height of Land, is the belt of country which in last year's report was called the "steppes" or belt remarkable for its rapids and falls. In this zone or belt, so far as I have yet had an opportunity of seeing it, I believe there is a much larger proportion of arable land fit for settlement than in that which I have explored this season. From the Long Portage to Greenhill Portage on the Moose and Michipicoten route, and from the Otters' Portage to Iroquois Falls on the Abittibi, there is in the aggregate, I have no doubt, a large quantity of land fit for cultivation, and which will be settled upon so soon as the country is opened up and markets rendered accessible. I am inclined to think, however, that even in this belt there is no inconsiderable quantity of land overspread with swamps and peat-mosses, more particularly on the east side of the Abittibi, in which direction I should not be surprised to find that the peat-mosses extended almost unbroken from Hannah Bay on the coast to near Lake Abittibi.

"In thus modifying my views in reference to the fitness of this territory for agricultural, and more especially pastoral, pursuits, I hardly feel it necessary to make any apology or excuse. In last year's report I distinctly stated (p. 15) as follows: 'From personal observation I can only speak of the country on the routes over which I have travelled, namely, that by the Upper Ottawa, Abittibi lake and Abittibi river, when going to Moose Factory, and that by the Moose and Michipicoten rivers on my return. Even on these routes it was, from the nature of the country, impossible to see much more than the banks of the rivers and shores of the lakes, excepting at the portages, the camping places and at the posts of the Hudson's Bay Company. My present opinions are, therefore, given with some degree of reserve and should not be regarded as altogether final or conclusive.'

"Again, in giving a short description of the topography of the territory I said, p. 9, 'Another feature is the slight depth to which the rivers have worn out channels for themselves below the general surface of the country, unlike those in our north-west territories, the beds of which are described as frequently two or three hundred feet below the general surface of the prairies. This is owing doubtless to the greater hardness of the underlying strata in this northern territory, but is to be regretted as being on the whole unfavourable to good natural drainage.' I can only say that I am sorry that my fears, rather than my hopes, have been realized by the result of this year's explorations.

"The uniformly unsatisfactory results of my excursions inland became very discouraging, and recorded daily, sometimes almost hourly as they are in the narratives of my expeditions, the constant recurrence of the same features described in the same

language, must, I am quite aware, render it nearly as monotonous for those whose duty it may be to read, as it has been mine to see and record.

"My object has been to obtain and convey a good general idea of the leading features of a large territory, rather than spend the limited time and means at my disposal in an exhaustive examination of a small section only of the country. It was impossible therefore to make long excursions back from the rivers, even if the nature of the country did not forbid it. Whenever therefore the failure of the timber, the depth of the peat, and wetness and bogginess of the surface convinced me that I had beyond doubt come to a peat-moss, I at once returned, without fruitlessly attempting to explore a bog, covering possibly hundreds of square miles of surface, and in many places not firm enough to support my weight."

Explorations in 1881.

In the year 1881 my canoe voyage or journey to the north commenced at the mouth of the Michipicoten river, but that route to Moose Factory was only followed about one hundred miles. At a point about ten miles from the Hudson Bay Company's Post at the north end of Lake Missinaibi, we struck eastward to Flying Post on the Ahkuckootish or Ground Hog river, and from thence to Mattawagamingue (sometimes called Mattawakumma) Post on a lake of that name, situated still further eastward. The Matagami, or South Branch as it is sometimes called, issues from this lake, and down it and the main Moose river we descended for some two hundred and seventy miles to Moose Factory.

Returning, the coast of James' Bay (which, it is hardly necessary to say, is a part of Hudson's Bay) was followed from Moose Factory, at the mouth of Moose river, to Albany Factory, at the mouth of Albany river, or a distance of nearly one hundred miles. From thence our course lay up the Albany river to Martin's Falls Post, and from Martin's Falls to Osnaburgh House, another Hudson Bay Company's Post at the lower end of Lake St. Joseph and distant about four hundred and twenty-five miles from the coast. From Osnaburgh to the head of Lake St. Joseph is roughly estimated at about fifty miles. At this point the route crosses the Height of Land and leaves this territory. We followed it, however, as far as the Hudson Bay Company's Post on Lac Seul, or Lonely lake. From thence we struck southward to the C.P.R. near Wabigoon lake.

Here our canoe voyage terminated. It began at Michipicoten on the 26th of June and ended on the 1st of October.

Roughly estimated the distance traversed was one thousand two hundred and seventy-five miles, in the course of which one hundred and forty-three portages, varying in length from a few yards only to four miles, had to be made.

Observations relative to the geology, geography, soil, timber, minerals, etc., of the country passed through are recorded daily in the narrative of this voyage appended to the report for that year and printed by order of the Legislative Assembly in 1882. To this report, covering as it does some eighty pages, I must refer for details.

In regard to the physical features, and more especially the quality of the land and nature of the soil, between the Missinaibi, or north branch of Moose river, and the Matagami, or south branch of the Moose river, I prefer to quote the opinion of Mr. C. H. Gamsby, engineer in charge of a party sent out to explore a line for the C.P.R., commencing a little above Split-rock Portage, on the Missinaibi, and running eastward to the Matagami river.

This line crossed the country not a very great distance north of the canoe route over which I hurriedly passed, and is situated for the most part in the intermediate belt or plateau of this territory. As a survey such as that made by Mr. Gamsby and his assistants afforded them much better opportunities of obtaining information and forming reliable opinions in regard of the character of the country and the soil, I give his report in reference thereto in full.

"Under the head, "Report on Survey from Moose river, running eastward, to Lake Matagami," Mr. Gamsby reports as follows:

"Ottawa, December 13th, 1880.

"Sir,—I have the honor to report that, in conformity with your instructions of July 3rd, requesting me to proceed to Moose river, the eastern end of my exploration of last winter, and continue a compass line eastward to a junction line with Mr. Austin, who was proceeding west from Sturgeon river, I left Collingwood on the 8th July, and after experiencing some difficulty in procuring means of transport up the Michipicoten river, we reached our initial point on the 27th of the same month, and commenced operations, in accordance with those instructions, by running a compass line from the point above referred to in a general south-east course, carefully noting the courses and chaining the distances and obtaining such other information as the limited time at our disposal permitted. We reached the one hundred and sixteenth mile of the exploration on the 9th October ult. Having arranged with Mr. Austin to make the connection between our lines and otherwise complete the exploration, I started on my return, following and traversing the canoe route between Matagami and Flying Post. This route is at some considerable distance south of the explored line, and its traverse enables us to lay down a number of lakes in our plan, the position of which will very materially affect the projected location of a railway line. It will facilitate the description of the soil, timber and general character of the country explored, to divide it into several sections, as naturally divided by the larger streams flowing through it.

Section 1—Lies between the Moose and Kapaskasi rivers and covers a distance of thirty-two miles along the line of exploration.

Section 2—Lies between the Kapaskasi and Nestodjiastona rivers, a distance of twenty-two miles.

Section 3—Lies between the Nestodjiastona and Ground Hog rivers, a distance of some sixteen miles.

Section 4—Lies between Ground Hog and Matagami rivers, a distance of forty-four miles.

In each of these sections the soil and general characteristics are different, the surface of the ground varying from lightly undulating to high ridges and broken, the soil varying from the clay and clay-loam of the first section to the light sand of the fourth.

Section 1.—This section, of thirty-two miles in length and probably from thirty to sixty miles in width, from north to south, is lightly undulating, with gradual rise eastward. The soil is clayey-loam, or greyish mud mixed with vegetable mould. It is identical with the soil in the vicinity of the Hudson's Bay Post called New Brunswick House, where the agent informed me that fine crops of coarse grains and roots were grown during the past season. Fully seventy per cent. of the soil of this section may be classed as very good. The remaining thirty per cent. is composed of inferior lands, gravel ridges and muskeg. Timber (birch, poplar, cedar, spruce and tamarac) is found in abundance, and in many localities of large size; the cedars are particularly fine. The other varieties will furnish large quantities of fuel when required.

Section 2.—This section, of twenty-two miles in length, is apparently of less width than section one. Broken and high ridges occur on which granite rock crops out. The clay and marl soil occurs only in belts, and is replaced by sandy loam mixed with boulders. Probably fifty per cent. of the soil of this section would rank as good. The remaining portion, although not worthless, would be classed as inferior. A large portion of this section has been burned over; timber will be found only in the swamps on those portions. In the unburned portions a moderate quantity of white pine of fair size is found, mixed with the varieties prevailing on section one. No muskeg of any size occurs in this section.

Section 3.—This section, of about sixteen miles, has a fair proportion of clay soil, extending from the Nestodjiastona river, about four miles in a south-easterly direction, to

the Pishganagamee river. From the latter river to the end of the section the soil becomes sandy, with boulders, and although classed as inferior, I found fine crops of barley growing at the Hudson Bay Company's Flying Post on Ground Hog lake. The barley was stored at the time of my first visit, viz., September 15th. The potato vines had been touched with frost about that time, but were not killed till later on in the season. The timber of this section is very similar to that of section one, except that red pine takes the place of the spruce. Considerable quantities of red and white pine of good size are found throughout the whole of this section.

"Section 4.—This section lies between the Ground Hog and Matagami rivers, a distance of forty-four miles along the explored line. It is much higher and more broken than the other sections. Considerable rock is met with on the higher ridges and around the lake shores. The soil is sandy loam and boulders, and may be classed as inferior. Barley and oats of an inferior quality were grown at the Hudson's Bay Post on Matagami lake. I think the poor quality of grain was owing to poor cultivation and the exhausted condition of the soil rather than to any natural sterility. There is a great abundance of red pine growing on this section. It is tall, straight and sound, varying from four to fourteen inches in diameter; probably not up to the standard of lumber for exportation but of great value for local and domestic uses. The numerous lakes and streams will afford an easy means of moving the raw material to points where water power may be found for its manufacture. Means of transportation being furnished, there will spring up a large and increasing trade in the products of the forests between this section of the country and the prairies of the North-West. In considering the adaptability of this country for railway construction it will be necessary to divide it into two sections.

"Section I.—From Moose river to Ground Hog river, a distance of seventy miles, a good alignment may be obtained in the immediate vicinity of the explored line. No exceptionally sharp curves will be required. The gradients for the most part will be light; any gradient heavier than one foot per 100 feet will be short, and, I think, need not exceed 1.25 feet per 100 feet or 66 feet per mile. The work I should classify as light to medium, with very little solid rock.

"Section II.—From Ground Hog river to the Matagami river, a distance of forty-four miles, will require a careful examination with levels to determine the best location. If possible, the line should be placed further south than the explored line, in order to reach the south-west branch of the Matagami river, down the valley of which a good line may be found. Sharper curves and heavier gradients will be required on this section. The work will rank from medium to heavy, with some solid rock. The muskegs are not of a serious character and are of small extent. As we cross seven distinct branches of the Moose river, considerable bridging will be required, but by careful selection of crossings I think that not more than two spans of 100 feet each will be required over any of the streams.

"All of which is respectfully submitted.

"I have the honor to be, Sir,
"Your most obedient servant,

"C. H. GAMSBY,
"Engineer in Charge.

"To Collingwood Schreiber,
"Engineer in Chief."

In the narrative appended to my report and in an entry made on the 18th of July, (when at Matawagaminbue Post and on the point of resuming my voyage down the Matagami river to Moose Factory) will be found the following observation, p. 33:

"The size, position and geology of this and other lakes, as also of the rivers on the route from Mattawagaminque to Moose Factory, have been so fully and carefully ascertained and described by Dr. Bell, of the Geological Survey, (who passed over this ground

in 1875) that I shall, in the narrative of this part of my journey, omit much on the subject of distances, bearings and also of the geology of the country which I have hitherto, at the risk of being tedious, thought it advisable to give. I have, where necessary, therefore, made use of Dr. Bell's more careful and accurate measurements and observations on these points."

Dr. Bell states that the distance from the Hudson Bay Company's Post to the outlet is sixteen and a half miles and the extreme length of the lake (Matagami) about twenty-six miles. The distance from the outlet to the first fall in the river he estimates at five or six miles. This fall is about forty-five feet, and the portage, which is on the west side and called "The Fishing Portage," is about a mile in length. A mile and a half below this the river opens out into Lake Kenogamissee, said to be twenty-two miles long. Almost immediately below where the river issues from this lake there is a series of rapids and falls, and a portage called "Wa-wia-ton," about three-quarters of a mile in length.

Dr. Bell calculates a descent (from barometric readings) in the river at this point of one hundred and seventeen feet. The distance from the foot of Kenogamissee lake to Moose Factory is estimated at 216½ miles, in which eighteen portages are necessary in addition to the two above mentioned. Of these the Long Portage is the last, the remaining ninety miles or so to the sea being free from obstructions other than occasional rapids. The Long Portage was found to be about four miles in length, while the first and third portages above it measured respectively three-quarters of a mile and one mile and a quarter. The total fall between the extremities of the Long Portage (according to the reading of Dr. Bell's barometer) amounted to one hundred and ninety feet, and that of the three next portages above, one hundred and ninety-five feet, which with forty feet added for intervening spaces, would give a total descent of four hundred and twenty-five feet in ten miles.

"The river receives (says Dr. Bell) three considerable branches from the west, and two from the east, the largest of which are the Kai-bush-kasing from the west at twenty-two miles above the foot of the Long Portage, and Ka-ko-zhiskh (Ground-hog) river, from the same side, at about five miles higher up.

Below the Long Portage the largest branches are the Missinaibi on the west side at thirty-nine and a half miles, or forty-six miles above Moose Factory, and the Abittibi from the east at seventeen miles above the same post."

As regards the surface of the country through which the Mattagami river flows, Dr. Bell says: "Between the Height of Land and the rapid descent in approaching the Long Portage the Mattagami flows through a Huronian and Laurentian plateau, having probably an average elevation of one thousand two hundred feet above the sea. The general aspect of the surface is of an undulating character, but the inequalities do not often exceed one or two hundred feet. More or less rock usually crops out in the hills and ridges, while the intervals, if not occupied by swamps or lakes, have a sandy or gravelly sub-soil underlaid by bouldery earth or clay, and having more or less vegetable loam on the surface.

"From the foot of the Long Portage to the sea the river flows through a level region underlaid by flat-lying unaltered rocks. In this interval the banks, which are not often high, are composed, with few exceptions, of gravelly and bouldery earth and clay. The land immediately above the banks of the river is dry, and supports a second growth of popular and white birch, with some coniferous trees, but at a short distance back it was always found to be swampy and covered with small black spruces and tamaracs growing in a deep layer of sphagnum moss. The islands and the main land about the mouth of river consist of alluvial earth well suited for cultivation."

The general impression left on my mind by what I had seen of the territory to this time was as follows:—

Extracts from own Report for 1881.

"In the explorations which I have made in this territory during the last two seasons, the main object has been to obtain reliable information as to the value and resources of the

country. The narrative of this year's work which accompanies the present Report records daily the principal events as they occurred, and the leading features of the country as they were presented to me. However tedious and uninteresting it may be, I am persuaded that a perusal of the narrative will afford a better idea of the character of the country than can be obtained from any formal Report it will be in my power to make.

I may say generally, that in all relating to the flat country bordering on James' Bay, my explorations this year go to confirm the statement made in last year's Report. The land in this flat country, at all available for agricultural or pastoral purposes, may be comprised in three classes.

The first class consists of a belt from quarter of a mile to three or four miles in depth, on the shores of James' bay, extending unbroken, save by occasional points and reefs, from the eastern boundary of the province, as fixed by the arbitrators, to Albany river, the western boundary—a distance, following the line of the coast, of at least one hundred and fifty miles. This belt is chiefly valuable for its fine pasture, and the great quantity of marsh hay that it is capable of affording. When this part of the territory is opened up, no doubt considerable numbers of cattle may be raised here.

In the second class I include all the low-lying bottoms, points and islands of alluvial soil, found at intervals on the rivers in the territory. This land is good, but generally more or less flooded in the spring. Few spots are so high as to be out of danger at that time, should the ice become jammed and dam back the water—by no means an uncommon occurrence. It would, however, make fine meadows for either hay or pasture, and such of it as would allow seed to be sown before the season was too far advanced, would grow good crops of all the grains and roots that are suited to the climate. The area of this alluvial land must in the aggregate be very considerable, but it is so scattered that it is only rarely that enough can be found in one block to form a large settlement."

"The third class of land comprises a narrow strip extending along the margin of the rivers, sometimes only on one side, but more generally on each side. It is composed partly of the sloping banks leading up from the rivers or river bottoms to the level of the great plain above, and partly of the plain or plateau itself. The depth or width of this strip is determined by the wetness or dryness of the soil, and the length of time which has elapsed since the last fire; for although the peat and moss may have been destroyed and driven back, as it were, a short distance, they ultimately become so wet that they defy even the fire, and no sooner is it over than they again, it seems to me, begin to advance with the view of retrieving their lost ground. This is the fringe or strip of good land so often alluded to in the narrative of my explorations, and beyond which I invariably came to Sphagnum moss or peat, generally both. The soil on the sloping banks, and some times on the top of the bank, appears to be gravelly or even sandy. This is, I think, alluvial, and has been deposited by the rivers when their beds were more nearly on a level with the plain above. Be this as it may, the subsoil, if not the soil, of this great plain is almost entirely clay. Even at points where a good deal of sand was seen in the banks, the peat, at from half a mile to a mile back, nearly always rested on clay. This clay contains a considerable percentage of lime, and is really a marl. It may be doubtful if this clay would of itself constitute an easily worked or very fertile soil, but incorporated with a sufficient thickness of vegetable mould, or even of peat and peat ashes, a good, useful and lasting wheat soil would, I think, be obtained. The extreme narrowness of this strip or belt—rarely exceeding half a mile, and often not more than a quarter of a mile—detracts much from its value. I am of opinion however, that very extensive areas in the rear of this belt are frequently but lightly covered with peat, of say from one to six feet in thickness. Now, the height of these plains above the rivers, varying from twenty or thirty to upwards of a hundred feet, is amply sufficient, taken along with its general northerly slope of some three feet per mile, to admit of a complete and admirable system of artificial drainage being extensively carried out at very moderate cost. Thus drained, the sphagnum moss and peat would become sufficiently dry during the summer to burn, and if not the first year, by repeating the process would ultimately be completely destroyed; the ashes and a portion of the peat itself might finally with advantage be incorporated with the clay subsoil. It is quite

within the range of possibility that many thousand square miles of this peat-covered territory may be reclaimed, and that with such beneficial results in respect of the climate that it is also possible luxuriant crops of wheat and other grain may yet flourish on these vast plains, where at present nothing but sphagnum moss appears to thrive. In support of my opinion, that, preceded by drainage, much, if not all of the peat, where not too thick, can be got rid of by burning, I may mention that in some places on the banks of the Albany river, over which bush fires had passed, I observed that peat and sphagnum moss, which must have been at least two feet in thickness, had been reduced to ashes, and the ground left in such a condition as would have admitted of its being very easily cleared up and cultivated. This was due partly to the dryness of the summer and partly to the fact that the areas in question were naturally better drained than usual, owing to the proximity of the river and one or more ravines by which they were partly surrounded. The consequence was that the peat had been reduced to such a state of comparative dryness, that once ignited, it went on burning until the whole was completely consumed. I attribute the existence of the narrow strip of fertile land on the banks of the rivers entirely to this cause. But for the fires which, at longer or shorter intervals, sweep along the banks of the rivers, destroying the sphagnum moss and peat which may have accumulated in the meantime, these strips, like the great plains beyond, of which they form a part, would infallibly have been seized hold of by this extraordinary plant. If the peat mosses of this region reposed in basins or depressions in the underlying strata which deepened as we advanced from the river bank towards the centre, the difficulty and expense of draining and reclaiming them would be greatly increased. I am of opinion, however, that, save the general declivity towards James' Bay, the surface of the underlying clay is level or nearly so, and that the increasing thickness of the peat as we go back is really due to a rise in the surface of the peat moss itself from the circumference or edge towards the centre. While the obvious boundary of this flat or level clay country is James' Bay on the north, that on the south is not determined with any approach to certainty. It has been supposed to extend southward to the Long Portages on the Missinaibi and Mattagami branches of Moose River, distant respectively about one hundred and thirty and eighty-five miles from Moose Factory, and to be coextensive or nearly so with the area occupied by the underlying Devonian strata. The Laurentian rocks are very conspicuous in the gorges and channels of the river at and above these portages. On the Mattagami river the water descends over these rocks with a fall of not less than four hundred and twenty-five feet in ten miles, according to the measurement of Dr. Bell, while the fall in the Missinaibi branch is nearly three hundred feet in a like distance. One is tempted to imagine that this rocky range, so conspicuous on these routes, extended both eastward and westward of the rivers encircling as it were with a precipitous wall of rock the level clay country, and forming a well-marked and distinct southern boundary. But I doubt after all if such is really the case. Although this somewhat sudden rise in the underlying rock may circumscribe and limit the area occupied by the limestone and other Devonian strata, or even of the blue clay, yet I am satisfied that the drab and light-colored clays found above the blue clay, in the level country below, overspread a great part of the territory above and to the south of this barrier. My impression is that the general surface of the plain commences to rise a considerable distance before the long portages are approached, and excepting where cut through or denuded by the action of the rivers, this supposed rocky margin or rim has no visible existence, but is more or less deeply covered by the clays, sands and gravels of the so-called Drift, or glacial period.* That a very large proportion of the clay and other loose materials found on this upper plateau must have come from the north, and that it has been carried or transported in some mysterious way up hill, partly from the shores of the Hudson Bay, and partly from the lower plateau, admits almost of demonstration. On my way to Moose Factory I found fragments of the Devonian limestone on Kaibushkasing, or Kappuskuska Lake, at least one hundred miles, and also on

*If "the Drift" had *not* been thus deposited, or if we could imagine it removed, the fundamental Palæozoic strata of this northerly or coast belt would, I believe, be found to be bounded on the south by Huronian and Laurentian rocks, forming "a rim" four or five hundred feet in height, and rising to one thousand five hundred or more feet on the Height of Land.—E. B. B.

Kenogamissee Lake, about one hundred and fifty miles from the Grand Rapid, on the Mattagami River, the nearest known point at which that rock is found *in situ*; and what is still more remarkable, not less than eight or nine hundred feet above it. Again, when ascending the Albany River from James' Bay, I found pieces of this limestone continuously, from where it crops out some eight miles below Martin's Falls, to Osnaburgh House, on Lake St. Joseph, about two hundred and twenty miles distant from and not less than six or seven hundred feet higher than Martin's Falls. From Lake St. Joseph, on the north side of the Height of Land, I found bits of the limestone and silicified fossils from what I believe to be the same formation, to Lac Seul, or Lonely Lake, on the south side of the Height of Land, another hundred miles distant, And lastly, I traced them (although now very scarce) as far as Lake Minnietakie, some thirty or forty miles south of Lac Seul. These fragments and fossils of the Devonian limestone were almost always associated with the drab and light grey-colored clays before mentioned, and sometimes with sand or gravel. Accompanying the fossiliferous limestone throughout, I observed, too, a very peculiar and easily recognized variety of quartzite which I have never met with "in place" anywhere, and believe to have come from the east main coast of Hudson's Bay, probably little short of one thousand miles distant from Lake Minnietakie, where I got my last specimens. Thus there is, I think, sufficient evidence to prove that more or less of the materials composing the clays, sands and gravel now found on the second plateau, on the Height of Land, and for many miles south of the Height of Land, have been furnished by and transported from the far distant shores of Hudson's Bay.

"The territory included in what may be called the second plateau (although that below it is really a plain) commences at the somewhat sudden rise before referred to as taking place in the general surface of the plain, at or about the Long Portages on the Abittibi, Mattagami, and Missinaibi Rivers. This rise is not so marked on the Albany River; and while I am safe in placing the boundary not less than ten or fifteen miles above Martin's Falls, it may be considerably more. Nor is its southern limit—namely, where the plateau ends, and that known as the Heignt of Land begins—at all regular or well defined. So far as I have been able to form any opinion on the subject, I should place it on the east, about the lower end of Lake Abittibi, and at or about the lower end of Lake Miminiska, on our western boundary.

"Intermediate between these 'Green-hill Portages' on the Missinaibi River, Flying Post, and the lower end of Lake Kenogamissee may be mentioned as situated, in my opinion, on or about the southern limits of this plateau. The height of this plateau above the level of the sea (or James' Bay) ranges from six or seven hundred feet at its lower or northern edge, to from eight hundred and fifty to one thousand feet at the upper or southern edge.

"No part of this zone or belt is underlaid, so far as I know, by Devonian limestone or any other rock of that formation. Where seen in place, the rock is exclusively Huronian and Laurentian. It is rarely found projecting or rising up above the general surface, even in this plateau, and although often exposed to view both on the rivers and lakes, it is almost always in consequence of the denudation or removal of the overlying clay by the water of such rivers and lakes.

"As Dr. Bell very justly remarks, the surface, even on the Height of Land, is almost always covered with loose material of some kind. On this second plateau the loose material still consists of drab or light-colored clays, overlaid occasionally by gravel or sand. In these clays, as already remarked, pieces of limestone from the Devonian strata to the north may almost always be found, decreasing, however, in size and number as we recede from James' Bay and ascend towards the Height of Land. I am of opinion that careful analysis and microscopic examinations of the gravels, sands and clays found on or about the Height of Land would probably throw some light on their origin.

"In the second plateau anything deserving of the name of mountains or hills are rarely met with. The rock, in all probability, had been pretty well planed down by the ice before the clays, sands and gravels were deposited, or at least allowed finally to rest on this plateau. Still, the inequalities in the underlying Huronian and Laurentian rocks are

sufficient to impart, occasionally, somewhat of a rolling or ridgy character to the surface. Denudation has been carried out more extensively by the rivers in this plateau than in the lower plain, and the alluvial or bottom lands are greater in proportion to the whole. Lakes, too, are occasionally met with in the southern part of this zone or belt, which have originated, it seems to me, not so much in any deep natural depressions as the removal of the loose surface material by the rivers flowing through them, and of which these lakes are often mere expansions.* While, however, there is in the aggregate a large quantity of arable land, such as may be seen at New Brunswick and at Flying Post, and a very much larger area still of land that would form fine pastures and meadows, I am, notwithstanding, strongly of the opinion that muskegs or peat mosses and swamps overspread the greater part of this belt or plateau also. This is more particularly the case as regards the lower or northern part.

"Of the third plateau, or that which may be said to constitute the Height of Land, I shall say little. As we approach it from the north, the outline of the country becomes bolder and more rugged; the underlying Laurentian rocks appear more frequently above the surface, forming low ridges or dome-shaped knolls. Viewed from the north they rarely present the appearance of a mountain range, although broken ridges and isolated hills may be seen, from two to three hundred feet in height. Only on the Height of Land, near the head waters of the Abittibi, have I ever seen what might be fairly entitled to be called mountains. These were seemingly five or six hundred feet in height, and, separated as they were from each other by huge gaps, looked like the last remaining portions of an extensive and continuous range, the greater part of which had been overthrown and carried bodily away by the overpowering force and pressure of the ice from the north. The hollows between these low rocky ridges are very frequently occupied by lakes, marshes and swamps. Sometimes these last recovered with a growth of alder, willow, tamarac or grass. Beaver meadows are not uncommon, and wild rice is now and again met with in some of these lakes. The soil on the ridges is generally sandy or gravelly—rarely clay, so far as my experience goes; although on the Height of Land Portage, on the Abittibi route, clay is found at both ends of the portage. This soil, generally light and sometimes stony, is usually dry and warm, and although a small proportion of it only may be suitable for grain-growing, yet nearly all of it will afford more or less pasture. Peat mosses or muskegs are even to be found on and to the south of the Height of Land, but the area occupied by peat-mosses is relatively small compared with that which is covered with timber."

The succeeding year (1882), I ascended the Mississaga river on the north shore of Lake Huron, and crossing the height of land at its source, struck the head waters of the Ahkukootish or Ground-hog river, which was descended to its junction with the Mattagami river. This last was followed to its junction with the Missinaibi, and from that point, the united water, thereafter known as the Moose river—bore us to Moose Factory on the coast of James' Bay. On my return, I ascended the Mattagami branch of the Moose to its source, and crossing the watershed struck the head waters of the East branch of Spanish river, which we descended until within a short distance of Whitefish Lake, to which a portage was made and Whitefish river thereafter followed to Lake Huron. These routes, very rarely travelled by other than Indian hunters, took me through a considerable extent of territory on both sides of the water parting about which comparatively little was then known. In my report for that year, printed by Order of the Legislative Assembly in 1883, and which will be referred to under this and other heads, the following will be found on p. 7 *et sequeniia.*

Extracts from Report for 1882.

"The leading physical features of the territory claimed by Ontario have been already so fully described in former reports, that little remains to be said on that subject.

"Since my last report, however, the Report of Progress of the Geological survey for 1879-80 has come to hand. In it there is an interesting description of Hudson's Bay,

*This is most conspicuous in regard to some of the lakes on the Albany River.

and the regions lying adjacent thereto, by Dr. Bell, assistant Director of the Survey, than whom no one is better informed on the subject, having explored in an open boat no inconsiderable portion of the bay, as well as crossed it from York Factory to Hudson's Straits, in the Honourable Hudson Bay Company's ship. I have, therefore, much pleasure in quoting from the report in question, p. 27. C. *et seq.*, where under the head "General account of Hudson's Bay." * Dr. Bell says: "In the popular mind Hudson's Bay is apt to be associated with the Polar regions; yet no part of it comes within the Arctic Circle, and the latitude of the southern extremity is south of London. Few people have any adequate conception of the extent of this great Canadian sea. Including its southern prolongation, James' Bay, it measures about one thousand miles in length, and is more than six hundred miles in width, in the northern part. Its total area is in the neighbourhood of five hundred thousand square miles, or upwards of half that of the Mediterranean. It is enclosed by the land on all sides, except the north-east, where it communicates by different channels with the outer ocean. The principal or best known of these is Hudson's Strait, which is about five hundred miles in length, and has an average width of about one hundred miles.

"Hudson's Bay, which might have been more appropriately called Hudson's Sea, is the central basin of the drainage of North America. The limits of this basin extend to the centre of the Labrador peninsula, or some five hundred miles inland, on the east side, and to the Rocky Mountains, or a distance of one thousand three hundred miles, on the west. The Winnipeg basin constitutes a sort of out-lier of the region more immediately under notice, since the waters drain into it from the north, south, east and west, and discharge themselves by one great trunk, the Nelson River, into Hudson's Bay. The southern-most part of this basin, namely, the sources of the Red River, extends down nearly to latitude 45°. The head waters of the southern rivers of James Bay are not far to the north of Lake Huron, while one of the branches of the Albany rises within twenty-five miles of the north shore of Lake Superior. Including the Winnipeg system, the basin of Hudson's Bay has a width of about two thousand one hundred miles from east to west, and a length of about one thousand five hundred miles from north to south, and its dimensions approach the enormous area of three million square miles. Over a great part of this region there is a temperate climate, and although the soil of much of it is comparatively barren, yet large tracts are very fertile. The numerous rivers and lakes of the first class, embraced within these limits, will prove of great value in the settlement of the country. Both the bay and strait are remarkably free from rocks and shoals, which might interfere with their free navigation. The groups of islands near the east side of the bay are surrounded by deep water, and a wide channel leads up the centre of James Bay. Fortunately the main body of the great bay, which is the portion which may hereafter be frequented by shipping, is entirely without shoals, reefs or islands. The depth is very uniform over most of the bay, and nowhere does it present any great irregularities. It averages about seventy fathoms throughout, deepening to one hundred and upwards in approaching the outlet of Hudson's Straits, while in the strait itself the soundings along the centre vary from about one hundred to upwards of three hundred fathoms. The bottom appears to consist almost everywhere of boulder-clay and mud. Near the shores a stiff clay, affording good holding ground for anchors, is almost invariably met with on both sides.

"James' Bay begins at Cape Jones, on the east side, and Cape Henrietta Maria on the west, and runs south about three hundred and fifty miles, with an average breadth of one hundred and fifty miles. The east side of Hudson's Bay, including the southern prolongation is known as the Eastmain coast. Between Cape Jones and Cape Dufferin, on the Portland promontory, and again in approaching Cape Wolstenholme, at the termination of this coast, the land is high and bold, some points attaining an elevation of nearly two thousand feet above the sea. The country on the south-west side of the main bay, as well as that lying to the west of James' Bay, is low and generally level, with shallow water extending a long distance out from shore. Both sides of Hudson Strait are high and rocky, but the northern is less precipitous than the southern.

* Now that the Province has secured a frontage on its shores, everything relating to this vast inland sea, and its resources becomes of special interest and importance.—E. B. B.

"Of the numerous rivers which run into Hudson's Bay from all sides, about thirty are of considerable magnitude. All those which enter upon the Eastmain coast appear to flow in a uniform course directly west, or parallel to one another, and as the height of land in the centre of the Labrador peninsula is furthest inland towards the south, the rivers which fall into the southern part of this coast are the largest, and the remainder become progressively smaller as we go north. Numerous streams converge to the head of James' Bay from all points southward of an east and west line passing through its southern extremity. The Moose, about a mile wide, is the principal of these. On the western side, the Albany and the Churchill Rivers are the longest, but the Nelson, with a course of only about four hundred miles, discharges the greatest body of water into the sea. Indeed this huge artery of the Winnipeg system of waters may be considered as one of the greatest rivers of the world. Few of the rivers of Hudson's Bay afford uninterrupted navigation for large vessels to any great distance from the coast. During the season of high water shallow draft steamers might ascend the Moose and two of its branches for upwards of one hundred miles. Hayes River and two of its branches might also apparently be navigated by such craft in the spring, to points about one hundred and forty miles inland, and the Albany for nearly two hundred and fifty miles; while larger steamers might ascend the Nelson for seventy or eighty miles from the open sea. The Nelson is the only muddy water river entering Hudson's Bay.* Most of the others have a slightly brownish tinge, but their waters are perfectly wholesome, and contain only very small quantities of foreign matter. The Churchill which is the second largest river of Hudson's Bay, is a beautiful clear water stream, somewhat larger than the Rhine. It is remarkable for having at its mouth a splendid harbour, with deep water and every natural advantage for the purpose of modern commerce.

"The only harbours on the west side of Hudson's Bay are those formed by the mouths of rivers, but none of them, with the exception of Churchill Harbour, can be entered by vessels drawing more than ten or eleven feet, and only at high water even by these. The Nelson may form an exception to this. Most of its estuary becomes dry at low tide, but a channel runs through it near the centre, as far as the head of tide-water. I sounded this channel in a number of places in 1878-79 and '80, and although an average depth of about two fathoms at low water was found, continuous soundings throughout might have shown interruptions or shallower water in some places. As stated in previous reports, there is a section at the head of tide, or between the tidal portion and the regular inland channel of the river, in which not more than ten feet of water were found. This may extend for about two miles, above which an apparent continuous channel, with a depth of about twenty feet, according to our soundings, extends to the lowest limestone rapid, which is the first break in the navigable part, and is between forty and fifty miles from the head of tide, or from seventy or eighty miles from the open sea. If the section referred to were deepened, steamers coming in from sea might enter this part of the river and find perfect shelter, or even proceed up the stream to any point below the rapid referred to. In continuation of the channel running down the estuary, a 'lead' of deeper water extends out into the bay, and forms the 'North River,' or 'York Roads,' with excellent anchorage. The Churchill, unlike all the other rivers, has a deep, rocky and comparatively narrow mouth, which can be entered with ease and safety by the largest ships at all stages of the tide. On the point at the west side of the entrance of the harbour stands the old 'Fort Prince of Wales,' which is probably the largest ruin in North America. Although occupying a commanding position, and mounting about forty large guns, it was surrendered without firing a shot, to the French Admiral La Perouse, who destroyed it in 1772. The ruins of this large fort are shown in the accompanying woodcuts, taken from photographs. Along the west coast the rise and fall at spring tides amount to about eleven or twelve feet, on an average, and is pretty uniform, diminishing somewhat towards the south. It is greatest at the mouth of the Nelson River, where it amounts to about fifteen feet. The tides are lower all along the east side of the bay. In Hudson's Strait there is a very good tide, according to the report we have received of Acting Staff Commander J. G. Boulton's reconnaissance during the past summer. Geologically, the basin of Hudson's Bay, excluding the western or Winnipeg division, lies

* The water of Abittibi river is also very muddy.—E. B. B.

within the great Laurentian area of the Dominion. Cambro-silurian rocks, resting almost horizontally upon these, form an irregular border along the south-western side of the bay; and in the valleys of some of the rivers they extend inland from one to two hundred miles. To the south and west of James' Bay Cambro-silurian are overlaid by Devonian rocks, which here occupy a considerable area. The long chains of islands which fringe the east coast for nearly three hundred miles to the northward of Cape Jones, and also the main land in the vicinity of Richmond Gulf, are composed of bedded volcanic and almost unaltered sedimentary rocks, resembling the Nepigon series of the Lake Superior region, which may be of Lower Cambrian age. On the western side of the bay, from Churchill northward, quartzites and other rocks, which may also belong to the Cambrian system, appear to be largely developed. Valuable minerals may be looked for on this coast. The extensive level region around the south-western side of the bay, is overspread with a great sheet of boulder clay, which is generally covered by the modified drift. The rocks of the outlying or Winnipeg division of the basin comprise an extensive series ranging from the Laurentian to the Tertiary."

That portion of the coast of James' Bay which forms the frontage of the territory claimed by us, is low and shallow. From the eastern boundary to the western, with a frontage of more than one hundred and fifty miles, there are no harbours for vessels drawing more than ten feet of water. Vessels, however, drawing ten feet or under, can enter and ascend both Moose and Albany Rivers, as far as the factories, when the tide is at its height.

All the sailing craft employed at Moose Factory and I think, also those at Albany, even to schooners of ninety or one hundred tons burden must, at the approach of winter be hauled up out of the water on to the banks some twenty feet at least above the river, to escape damage, if not positive destruction when the ice breaks up in the spring.

The only deep and safe harbour that I know of, is at the north-eastern extremity of Charlton Island, some sixty or seventy miles from Moose Factory, and nearly north of where our eastern boundary is supposed to be. This was described in my second report.

From James' Bay the land rises slowly towards the south at the rate of about three feet in a mile, as we ascend Moose River and its branches, until we approach what are known as "the long portages," distant from eighty to a hundred and twenty miles from Moose Factory, where the inclination increases considerably. This belt is a vast plain, the far greater portion of which is covered with what the natives call muskego or muskegs, but known to us as peat-bogs or mosses.

Underlying the peat, clay is almost invariably found wherever the bottom can be reached. This clay, as seen on the points of poles thrust down into it, is a bluish gray colour. As seen in the banks of the ravines and rivers it is a light gray, sometimes a drab colour. The latter is more common in the second belt or zone above the long portages, and with stones of older rocks generally contains fragments of fossiliferous limestone from the Devonian beds to the north. The other clay also frequently contains boulders and stones of Laurentian, Huronian and Trap rocks. Both are calcareous, and therefore what may be called marls.

Below these in the lower or coast belt or zone of this territory a tough blue or slate coloured clay is sometimes met with. It often contains marine shells, but very few stones or boulders. Lime enters so largely into its composition, that if only sufficiently indurated, it might be fairly classed as a limestone. Sand in the form of mounds and ridges is also occasionally met with, but more generally it appears in a layer or stratum of no great thickness in the banks of the rivers, resting on the clays. The underlying rock in the lower belt is rarely seen, but where exposed is generally found to be Devonian limestone. No hills whatever occur in this lower belt, and the timber is confined to narrow strips along the water-courses, and to islands in the larger rivers.

Referring to the country* lying between the Abittibi River on the east, and the Missinaibi River on the west, although there is a sudden rise of from three or four hundred and fifty feet in twenty miles at the long portages, and although too, there is a

* This is the centre or intermediate belt.

great deal of rock exposed in the bottom and banks of the rivers, still very little rock is met with elsewhere, being for the most part deeply covered by the clays of the boulder or drift formation.

The country, however, continues to be too dead or flat, and notwithstanding a perceptible tendency to assume the form of low ridges here and there, as we advance, the natural drainage is insufficient, and peat mosses still overspread large tracts of what would otherwise be good land. No decided change in the character of the surface takes place until we approach the 49th parallel. North of this the surface is not only flat, but there are few if any lakes. South, however, of this parallel, the country becomes gradually broken and uneven, rising into ridges from one to two hundred feet in height, and in the intervals between these we have frequent lakes, sometimes swamps, at others marshes, and not unfrequently areas of good arable land. Rock is often met with, but generally confined to the banks of the rivers, and the shores of the lakes.

As we advance towards the south, not only does the country become more broken, until at least one-third of the surface is covered with lakes, but there is a change also in the composition and character of the loose material overlying the rock. the clays or rather clay marls already referred to, give place to sand and gravel. There is a very marked increase too, in the number of boulders, and while there are always some of these erratic stones whose peculiar appearance or mineral composition, enables us to recognize them as natives of the far distant Eastmain coast, by far the greater number, although brought also from the north, have not come nearly so far. Many of them, indeed, have been manufactured, so to speak, almost on the spot, out of material of the ridges of Laurentian or Huronian rock (whichever it may be) lying immediately or at no great distance to the north of where they now rest.

The character of the loose material on the surface, the rounded and "hog-backed" shape of the hills and ridges, the deep channels and gorges extending for miles in a northerly and southerly direction, quarried by no visible hand or agency out of the hardest of rock, the polished surface in some places, and the numerous parallel and deep scratches in others, afford strong if not absolutely convincing proof to my mind of tremendous erosion. The same evidence confronts us everywhere, not only north of the Height of Land, but over it, and down the southern slope to our great lakes, the very existence of which is in my humble opinion largely if not entirely due to the same mysterious power.

The only agent known to me, that would seem at all adequate to account for the phenomenon in question, is ice. Not ice in the form of icebergs, and impelled only by the feeble force of the winds or even ocean currents, but a solid sheet of ice moving as water does, and as glaciers are known to be capable of doing. The sheet of ice, too, must have been several thousand feet in thickness. Mr. George Dawson, F.G.S., in his able and interesting Report on the Geological Resources of the Region in the vicinity of the 49th Parallel, tells us "that Laurentian and Quartzite erratics were found in abundance to the height of over four thousand feet," on the three Buttes or Sweet-grass hills at the foot of the Rocky Mountains. As the Height of Land north of Lakes Huron and Superior will not I believe average more than thirteen or fourteen hundred feet above the level of the sea, it is evident that such a sheet of ice if continuous or equally thick, must have covered the Height of Land not less probably than two thousand feet. The great difficulty is to find the power or force which has been sufficient to set and keep in motion (however slow) this prodigious body of ice. That the erosive agent has moved from the north towards the south the rocks themselves afford silent but convincing testimony. That the propelling power has been so mighty as to have been almost irresistible is equally certain. The hypothesis which appears to me most fully to meet all the requirements of the phenomena in question is, that during the long ages of intense cold, known as the glacial epoch, what has been called a "Polar Ice-cap" formed at the North Pole which, constantly increasing in thickness, ultimately attained such a vast height that by the sheer force of gravity alone the ice at length began to spread and move in a southerly direction, or from the Pole towards the Equator, overpowering every resistance that the inequalities of the surface even when composed of solid rock could oppose. But whatever

the agency may have been, that an inconceivably great quantity of rock has been moved so to speak from Nature's quarries in the north, crushed and ground by her mills into gravels, sands and clays, transported hundreds of miles to the south, and then spread out, forming immense stores of the raw material for soil in regions more favourable probably to animal and vegetable life than that from which the rock was taken, cannot admit of a doubt. These are facts which no thoughtful observer who has visited the territory in which these vast operations have been carried on, can question, however uncertain he may be as to instrumentalities by which the work has been accomplished. Further speculation on this subject would be out of place here, but those who may desire it will find much interesting information in two articles by Dr. L. P. Gratacap, entitled "The Ice Age" in the "Popular Science Monthly" for January, 1878, and November, 1878.

From the 49th Parallel southward to the Height of Land the country, although more broken, is better drained, and much more generally timbered than the flat plains to the north. The timber too is more valuable, as red and white pine are now found growing, more particularly on the higher and drier ridges A great number of the lakes afford striking illustrations of what has taken place in respect of some already, and of a change which all without exception are undergoing, namely drainage, or filling up and conversion into dry land. This conversion is taking place most rapidly in respect of those lakes through which the larger rivers flow and is brought about in two ways. In the first place these rivers bring down vast quantities of sediment which, settling in the lake basins, gradually fills them up. And in the second place the rivers are in many instances clearly seen to be cutting through and destroying the natural bank, reef or other barrier at the outlet or lower end of these lakes, thus permanently lowering, if not draining off the water altogether. The steps in this process are, the conversion of the lake into a marsh, of the marsh into a swamp, of the swamp into dry land. It is a process, which when complete, simple as it may appear, has elsewhere produced no inconsiderable proportion of the finest land in the world, and is doing a like good work here for posterity."

Climate.—"The climate of this territory in respect of temperature is one of extremes. The winters are cold—the temperature falling sometimes as low as forty degrees below zero of Fahrenheit's thermometer, and occasionally rising to ninety degrees in the summer even down on the coast. Last year it was on one occasion ninety-four degrees in the shade at Albany Factory and ninety-two degrees at Moose Factory. The mean temperature of the summer at Moose Factory is about sixty degrees, varying two or three degrees above or below that average in different years.

We have unfortunately no record of the temperature at any of the inland posts, with the exception of Martin's Falls on the Albany River, and this Post, although more than two hundred miles up the river, is still north of Moose Factory. The Meteorological Service, the head office of which is in the City of Toronto, has collected and is still obtaining most valuable and interesting information relating to the climate of almost every part of the Dominion. There are two stations in connection with this service on James' Bay—one of which is at Moose Factory and the other at Albany. Observations have been made for a short time at Martin's Falls, but are now I believe discontinued. These stations are, however, in the extreme northern part of the territory we claim, and in which we are naturally most deeply interested. There are no stations in the central or southern divisions, and consequently we have no reliable scientific data to guide us. The means at the disposal of the service are doubtless too limited to allow of its Director establishing and maintaining stations everywhere at once, but I think it is very desirable to have some reliable information in reference to the climate of the central and upper or southern parts of the basin of the Moose River—embracing as it does some thirty or forty thousand square miles of territory.

Dr. Bell is of opinion that the climate improves as we proceed northwards from the Height of Land to Moose Factory, the lower elevation of the coast, and other favourable influences, more than compensating as he believes for the difference of latitude. The season, however, that Dr. Bell made his dangerous but remarkably successful exploration of the East-Main coast, was I think an unusually fine one, and hence it is possible that Dr.

Bell formed a somewhat too high opinion of the climate on the coast, although it is undoubtedly far superior to what popular belief has generally supposed it to be. I myself consider that in many very important respects, the climate of the central and southern divisions of the territory is better than that on or near the coast.

The only place in the territory where any reliable observations have been made in regard to the quantity of rain, is at Moose Factory, on the coast. The rain-fall *there* forms no criterion on which to form a safe judgment as to what it may be in the whole territory, more particularly in the southern high-lands. From my own observations and enquiries, I feel safe in saying that, without being too wet, there is amply sufficient rain and dew to support the most luxuriant vegetation. At Moose Factory the rain-fall in 1878 amounted to twenty inches, and of snow to fifty-nine inches, making the total precipitation of melted snow and rain 26.86 inches, for that year. The number of days on which rain fell was eighty-four. These were distributed as follows: January 1 day, February 0, March 1, April 6, May 11, June 9, July 12, August 7, September 19, October 14, November 3, and December 1 day. At Moose Factory, while there is quite enough of rain during the summer months, the rainfall is, I think, somewhat excessive in the months of August and September. Possibly this may be confined to the coast. The quantity of snow is much less than that which falls in the Province of Quebec, being not as much as half that at the city of Quebec itself. Nor is the snow-fall at Moose Factory nearly as heavy as at Gravenhurst, Parry Sound, and other places on the north shore of Lake Huron. The healthiness of the climate is unquestionable."

In the year 1883, the route taken when going north to Moose Factory was by steamer to Red Rock, Lake Superior, thence by canoe up the Nipigon River to Lake Nipigon, thence to Longlake House at the north end of the lake of that name, thence down the Kenogami River to its junction with the Albany River, thence down the last mentioned river to Albany Factory, thence along the coast of James Bay to Moose Factory.

Returning, what is known as the Michipicoten route was followed back to Lake Superior.

Extracts from Report for 1883.

The physical features of the country traversed between Lake Nipigon and Long Lake differ in no respect worthy of special notice, from those presented by all that portion of the Height of Land plateau south of, and near to the water parting, and in some instances for many miles on both sides of it. These leading features may be described in few words as consisting of numerous lakes and swamps, the banks and dividing ridges of which are usually low in the northern but higher and more rocky in the southerly portion of this plateau. These lakes are generally shallow, and run north and south, or in other words their longer axis point northward and southward, or from that to north-east and south-west.

The soil of what may be called the dry land is for the most part sandy, gravelly or encumbered with boulders. On the lower portions, however, clay and clay-marl are not unfrequently met with, sometimes underlying the sand and at others forming the surface. The proportion of arable land however within twenty miles, on either side the water parting, is very small, as compared with the whole area included in this belt, the length of which, from the head waters of the Ottawa and Abittibi on the east, to those of English River and Albany River on the west, is, as already stated, not less than five hundred miles in a straight line. The fundamental rock is Laurentian or Huronian. The area occupied by bare rock is very limited even in that part of the plateau south of the watershed, and still less in that lying to the north.

The Canadian Pacific Railway from Biscotasing Station on the east, to White River station on the west, a stretch of nearly two hundred miles, passes through what may be considered about the poorest part of this Height of Land plateau.

Dr. Bell with a strong party visited and carefully examined Long Lake and the

adjacent country in 1870, full details of which exploration will be found in the Report of the Progress of the Geological Survey for 1870-71. He gives the following description of Kenogami or Long Lake, viz :

"The southern extremity of Kenogami or Long Lake is about twenty-two miles due north of Jackfish Bay, opposite the Slate Islands, the Height of Land between the waters of Lake Superior and those flowing into Hudson's Bay, being about one mile south of this point or twenty-one miles north of Lake Superior. Long Lake for the first eight and a half miles, runs nearly due north. The breadth in this part varies from two to forty chains, and averages about twenty. From this point to the outlet its course runs nearly straight, bearing N. 30° E. (ast.) ; so that its general bearing, from one extremity to the other, is about N.N.E. The average breadth of the main section, forty-six miles in length, found by taking the mean of fifteen measurements, at equal distances, is 104 chains, or a little over a mile and a quarter. Following the axis of the lake, the whole length will therefore be fifty-four and a-half miles, while in a straight line between extreme points it is fifty-two miles, As already stated, the shore line measures 192 miles, exclusive of islands. The following are the principal streams which enter Long Lake :—

"1. Hanes River, on the west side, at eight and a quarter miles from the southern extremity.

"2. Ka-we-sa-qua-ga-ma, or Paint River, which enters the same side from the south-westward at two miles north of Beatty's line.

"3. Ka-muck-a-ti-wa-ga, or Black-water River, which enters the same side from the north-westward, three miles north of Beatty's line.

"4. Kinonge, or Pike River, also on the west side, eight miles from the outlet.

"5. Making-Ground River, on the east side, one and a quarter miles from the outlet.

"The valley of Black River, and the southern part of Long Lake, form one continuous depression running due north and south. Its sides are lined with long moraines, composed of well rounded boulders. Numerous ponds lie amongst these in the lower levels. Black River takes its rise in a chain of these ponds, connected together by short links of sluggish water ; the northernmost pond being only a little over a mile south of Long Lake. This route can be followed in small, light canoes to Lake Superior, but is never attempted by larger ones on account of difficulties in the navigation of Black River. The country around the southern part of Long Lake is rugged and mountainous with very little covering of any kind upon the hard gneiss rocks. What appeared to be the highest of these hills, lies a distance of two and a half miles west of the extremity of the lake, and is, by barometrical measurement, 540 feet over the level. Going northward the hills become gradually lower, until about half way down the lake (or at thirty miles on the west side, and twenty-four on the east, from the outlet), the country has assumed a comparatively level aspect, with an occasional hill from fifty to one hundred feet high.

"The line run last summer by Mr. Walter Beatty, P.L.S., south-easterly from Lake Nipigon intersects the west shore of Long Lake at fifteen and a-half miles from its southern extremity, or twenty miles north of Herrick's line. The latitude of this point, from the mean of several observations both of the sun and pole star, I found to be 49° 22′ 30″. Around the southern part of Long Lake, and as far north as Beatty's line, the prevailing rock consists of the common variety of gneiss, with the usual W.S.W. strike. But from this point to within eighteen miles of the outlet, a very coarse, light reddish grey granite prevails. It is composed of whitish quartz and very large crystals of light coloured feldspar, with occasional flakes of mica. At the above distance the tender gray mica-schists, similar to those of McKay's Lake (and also cut by the same kind of granite veins), begin and continue for about two miles down the shore. Near the termination of the two miles referred to, finely grained, highly fissile mica-schists make their appearance, and are almost continuously exposed for about eleven miles along the east side, and for about the same distance (or to the Kin-onge River) on the west side. They stand nearly on edge all along, the strike gradually changing from about N.W. on the southern to S.W. on the northern side of the above breadth. The prevailing colour is dark greyish-green, but some considerable bands are yellowish-grey and olive-coloured, with a talcoid

aspect. The north-eastern strike of the northern limit of this mica-schist formation continues to the Making Ground river, which it intersects at about two miles in a straight line from its mouth. In one place on the east side of this narrow part of the lake ordinary gneiss running S. 70° W., and dipping northward at an angle of 45°, is seen below the fine green mica-chist. A small island in the same neighbourhood is composed of a rock resembling the imperfect grey gneiss of Hollow-rock Lake and other localities already mentioned. It runs S. 70° W., is hard, fine grained, grey, silicious and somewhat micaceous, and contains numerous small patches and short cross veins of white quartz. Northward from the limit of the greenish mica-schists just described, the shores and islands of Long Lake are occupied by a massive, reddish-grey, rather coarse-grained syenite, composed of translucent quartz, white and red feldspar, and dark green hornblende, with a little black mica. The same rock continues to be exposed in the hills on either side of the English river, as far down as the first portage."

Dr. Bell gives the following description, p. 341 *et seq.*, of the country lying to the north-west of Long Lake, and in the northerly part of this Height of Land plateau, viz.—

"The Manitou-namaig river enters the Kenogami River at six miles in a straight line from the outlet of Long Lake. Canoe navigation is interrupted by a rapid close to the mouth, around which there is a portage, on the north side, of twenty-six chains. The upward course of the river is north 57° west (Mag), four miles to the lake of the same name, the river in this distance being broken by a few rapids, with boulders, which, however, do not necessitate portages. This lake has the form of the letter "L" reversed. The lower portion, which is about six miles in length, with a breadth varying from three to 110 chains, runs north-west; while the upper portion, which is said to be over twelve miles long, runs south-west, and varies from twenty to about 100 chains in width. The upward continuation of the river leaves the northern extremity of the lake at the angle formed by the two stretches described. Following this, through a sluggish stream, at the end of half a mile we come to Round Lake, about two miles long. The course of the river above Round Lake is about west, for five and a-half miles; entering Arm Lake, one mile in diameter, at the distance of about a mile from Round Lake, and terminating in a shallow lagoon, half a mile wide, above which the main river turns south-westward, and was not explored any further. The above stretch consists of dead water, with the exception of a slight chute a short distance above Arm Lake, but this is passed without portaging. A very crooked stream, called Mink Brook, enters the river half a mile below the lagoon. Following up this, at about two and a quarter miles in a straight line, we came to Muddy Lake, which is two and a half miles long, and one mile wide. Only one slight chute occurs in the course of Mink Brook, and even here a portage is unnecessary. At a bay on the west side of Muddy Lake a portage three quarters of a mile long, runs south-westward to Springwater Lake. From the northern extremity of Muddy Lake a still-water brook, half a mile long, led us to a pond called Head Lake. From Head Lake a portage trail runs north-westward a mile and a quarter, mostly over swampy ground, to the lower part of Fleming's Lake, on the Ka-wa-kash-ka-ga-ma river, another branch of the Albany. Fleming's Lake (so named after the chief engineer of the Intercolonial railway) runs N.E. and S.W., and is five and a half miles long, by one mile and a half wide, with the exception of a narrow part in the middle. The outlet at the north-east extremity breaks through a ridge of boulders, producing a rapid, but below this the river is smooth to Ka-wa-kash-ka-ga-ma Lake which lies about a mile and a half to the north, and is three miles long by two wide. The river discharges from the north-west angle of this lake and flows smoothly in a westward course for a considerable distance. At two miles below the lake a portage trail three quarters of a mile long, runs from the river northward to a beautiful sheet of water called Wa-wong Lake; which discharges into it by a small brook, in the same neighbourhood. Wa-wong Lake is of a very irregular form, but its general outline will probably measure six miles from east to west, by three from north to south. According to the sketch maps, and descriptions which we received from the Indians, the Ka-wa-kash-ka-ga-ma river, after flowing a considerable distance westward, turns northward, passing through two lakes, and finally runs eastward to the Kenogami. This great bend in the river sweeps round Os-kan-a-ga or Bare-Bones Lake, which

is said to be one day's journey by canoe (or about twenty-five miles) in length. Below the lakes just mentioned the river is called Pe-geon-kai-geon, after the lowermost of the two lakes. This route is sometimes used by the Indians in coming from the Albany to Long Lake House, the amount of portaging being less than in following the Kenogami river the whole distance. A few miles below the trail to Wa-wong Lake, a branch, which the Indians follow going to Lake Nipigon, is said to enter the Ka-wa-kash-ka-ga-ma river from the southward. The upward continuation of the river is found at the south-western extremity of Fleming's Lake. Spring-water Lake lies about a mile and a half south of this part of the river, into which it discharges by a small stream, and measures three and a half miles in length, in a north-easterly direction. Six other lakes, connected with the same water, are found at short distances south-west of Fleming's Lake. One of these is over three and another over two miles in length. Following up the main river, at about nine miles in a straight line south-west of Fleming's Lake, we enter Mountain Lake, which has the same general bearings, and is three and a half miles in length. A rapid about a mile above Mountain Lake, interrupts canoe navigation for the first time in the thirty-one miles of this river and its chain of lakes which we examined; while below the point reached by us, opposite Wa-wong Lake, the Indians informed us that no portage occured for a long distance. The whole country explored in connection with the Manitou-namaig and Ka-wa-kash-ka-ga-ma river, is comparatively level. Here and there a gneissoid hill is seen rising one or two hundred feet above the general surface. The most remarkable is Granite Mountain, on the south side of Mountain Lake, which is composed of granite or massive gneiss, and has an elevation of about two hundred feet over the lake. This region is overspread with a fine yellowish sand, beneath which a considerable thickness of gravel is found in some places, and, underlying all, a light-coloured clay is occasionally seen. The sand and gravel are largely developed around Wa-wong and Fleming's Lakes, whose banks are from fifty to one hundred and fifty feet in height, the shores consisting of smooth, curving sandy beaches. Back from these lakes the surface of the country is rolling, and the soil generally of a light sandy and gravelly character. The wood consists of white birch, aspen, tamarac, spruce, balsam, fir, white cedar, and the banksian pine, or "cypress," many of the trees being large enough to be of value for timber. A country similar to the one just described is reported to extend in the neighbourhood of the Height of Land westward to Lake Nipigon, and eastward to New Brunswick House, on Moose river. As illustrating the general level nature of a portion of this region, I may refer to the fact that we did not find it necessary to make a single portage in going all the way from the English river to Head Lake, except the short one already mentioned at the mouth of the Manitou-namig river; while the outline of the country on either side of this river and the lakes was usually low and level. As already stated, no portage occurs along the Ka-wa-kash-ka-ga-ma river in the part examined (about thirty-one miles), or for some distance further down. The rocks met with in the country explored north-west of Long Lake House consists of Laurentian gneiss, with some black mica-schists. The general strike is west south-westerly, the same as throughout the extensive regions already referred to."

The first, second and third rapids or falls of sufficient magnitude to require portages, on the Kenogami River, occur about three, eight and eleven miles respectively from Long Lake. Its bearing for the first ten miles is northerly, turning however to east north-east a little above the third portage; a course which with some unimportant deviations it maintains to the eighteenth or last portage.

The Height of Land plateau is here almost crossed in a N.N.E. and S.S.W. direction, by a fine navigable stretch of water. The edge of this plateau on the Lake Superior side is not more than eighteen miles from Jackfish Bay on the north shore of that lake, and four miles from the southern extremity of Long Lake. The edge of the plateau on the north side is at or about the third portage, on the Kenogami river, above referred to. This makes the whole width of the plateau in a N.N.E. direction, about sixty-seven miles, of which fifty-five miles are covered by Long Lake and the first navigable stretch of the Kenogami river. The actual "water-parting" or "divide," is about a mile only south of Long Lake, hence at this point that part of the plateau lying north thereof is about 64 miles, and that south, only 3 miles in width.

At the third portage, what I have called "the central or intermediate belt" of this territory, begins. This belt is characterised by numerous falls and rapids in all the rivers by which it is intersected or crossed.

In the next stretch therefore, of about forty miles, no fewer than fifteen portages and demi-charges are met with. If Dr. Bell's estimates of the levels of Long Lake and of Pine Lake and Pembina Island on the Kenogami River be correct, the descent from the upper edge of this belt at or about the third portage, to the lower edge, at or about the eighteenth or last portage, cannot be less than 400 feet—or ten feet per mile. As there is I believe a corresponding descent or slope in the surface of the adjacent country, there can hardly be a doubt that the land in this intermediate belt is better drained, and therefore drier than in most other parts of the territory.

The width however of this belt, is considerably less than it is at any other part I have seen, being only about 40 miles, and that on the general course of the river which appears to be diagonal rather than straight across it.

On the other hand, the width of the coast belt or plain, is greater here than in any other part of this territory. Measured due north from the eighteenth portage, where it may be said to begin, to the coast, it is not less than 350 miles, and by the Kenogami and Albany Rivers about 250 miles. The palæozoic or fundamental stratified rocks of this great Hudson Bay basin, approach also much nearer to Lake Superior here, than at any other point known to me. If the late Mr. Herrick, P.L.S., was not mistaken in thinking that he had seen (as he is reported to have said) fossiliferous limestone "in situ" near the first portage on Pic River, the distance between these rocks, both presumably palæozoic, the one north and the other south of the height of land, will be little more than seventy-five miles. I have myself seen pieces of such limestone at the portage referred to, so large and angular as to justify the impression that it may possibly be "in place" at some point not very far distant. If not, these pieces must have been transported from the north, over the height of land as many other smaller and more rounded pieces of limestone undoubtedly have. Indeed on the bank of Long Lake itself I found two large pieces of fossiliferous limestone, which had beyond question been brought from the north, one of which was not less than twenty pounds in weight. Long Lake, it will be remembered, lies on the height of land plateau, and is, according to Dr. Bell's estimate, 1,066 feet above the level of the sea, and about 460 feet above Lake Superior.

It may be mentioned incidentally here, that Long Lake on this route, Crooked Lake on the Michipicoten route, and Matawagogig on that by Abittibi, are I think the least elevated portions of the great height of land plateau east of Lake Winnipeg and Nelson River. And that if there had existed any barrier at or near the outlet of Lake Superior, 500 feet in height, the waters of that lake would, I believe, have run northward into Hudson's Bay. On the other hand, supposing during the glacial epoch, Hudson's straits to have been closed or obstructed, the ice would possibly have moved southward over the height of land plateau to a greater depth, if not with greater speed, at these lower points than elsewhere. At, or indeed a little above the eighteenth portage, the Kenogami River enters the northerly or coast belt of this territory. This is described as being "a plain or flat country, largely overspread with muskegs or peat mosses, almost treeless except near the rivers, and extending from the foot of the last great falls or rapids, the northern edge of the intermediate or central belt, to the coast of James' Bay."

From this point to the Hudson Bay Companies post at Mamattawa, sixty miles, and from thence to its junction with the Albany River, about the same distance, the Kenogami River flows through this coast belt, as does also the Albany River itself, from thence to Albany factory. From "the forks" or junction of the Kenogami and Albany to James' Bay is roughly estimated at 130 miles, making the total distance from the eighteenth portage to the coast, about 250 miles, in which long stretch no falls or rapids occur to interrupt canoe navigation, or even that of larger craft at some seasons of the year. The other branch of the Albany is navigable in like manner to Martin Falls, about 80 miles above "the forks."

The more common physical features of this great plain or coast belt have been already sufficiently described in the preceding pages. It is unnecessary therefore to say more, as anything of special interest or importance will be given under other heads.

Explorations in 1884.

In 1884 my attention was devoted almost exclusively to a more particular and careful examination of the route from Lake Superior to James' Bay *via* Long Lake. The special object had in view was thus explained in the report for that year, p. 7. "In the report which I had the honour to submit of my explorations in this territory last year (1883), I called the attention of the Goverment to the importance of an early opening up and development of its agricultural, timber, mineral, and other resources, should the award of the arbitrators be confirmed."

"I had formed a very favourable opinion of what is known as 'the Long Lake route' to James' bay, on my somewhat hurried trip over the greater part of it last year.

Although late in the season, and at a period when the water in the rivers is usually low, I was alike pleased and surprised to find that from a point some fifty miles only north of Long Lake, to James' Bay, a distance of 250 miles, the navigation of the Kenogami and Albany Rivers was perfectly uninterrupted. Knowing that nearly all these northern rivers rise from ten to twenty feet in the spring above their summer level, I felt more than sanguine that this entire stretch would be found navigable by steamers of light draught, for at least six weeks after the breaking up of the ice. Having obtained the sanction of the Government I determined to examine this route more carefully, and if possible at an earlier period in the season, and should my expectations in reference to the navigable stretches be realized, it was further my intention to have explored for, and selected the best and shortest lines for the roads it would be necessary to make, in order to render the route complete."

This exploration was accordingly proceeded with during the summer, and the results, in some respects disappointing, were embodied in my report for that year, and printed in 1885.

The award of the arbitrators defining the northern boundary of the province, having been set aside by the decision of Her Majesty's Privy Council in 1884, it seemed advisable thereafter to confine my explorations to the height of land plateau, and to the intermediate or central belt, until the claim of the province to the northerly or coast belt (rendered somewhat doubtful by that decision) should have been established in the courts of law, or admitted by the Dominion Government.

Consequently the summer of 1885 was devoted to an examination of the country lying north of Lake Missinaibi and included between the Missinaibi River on the west, and Kapuskasing River on the east. In this tract, partly on the height of land plateau, and partly in the central belt, I expected to find some of the best land in the territory.

As this report has not been printed, and as it relates to a portion of the territory of more than usual importance and interest, it is now proposed to give it almost "*in extenso*" so far as it relates to the more important subjects dealt with in the present one.

TOPOGRAPHY.

Extracts from Report for 1885.

If by some convulsion of nature, the present outlet of Lake Superior had been closed, most people imagine that its waters would have found vent at some point on the south shore. The least elevated portion of the rim of the Lake Superior basin has generally been supposed to be situated at or near the south-western extremity of the lake. Distinguished geologists have even speculated on the consequences which might have ensued from the pouring out of its waters into the valley of the Mississippi. If, however, the lowest part of the watershed on the south side be as I believe, 600 feet above the present level of the lake, the popular notion on this subject is entirely wrong. The water of Lake Superior, if thus forced to find another outlet, would flow northward into Hudson's Bay, not southward

into the Gulf of Mexico. The water-shed between Dog Lake and Crooked Lake at the source of the Michipicoten River, is only about 430 feet above Lake Superior, and between the sources of Pic and Black Rivers, and Long Lake it is only a few feet more. Indeed, nearly the whole distance (150 miles) between Dog Lake and Lake Nipigon, the water-shed on the north or Canadian side is considerably lower than the least elevated portion of the water-shed on the south or United States side.

I have before had occasion to remark, that the height of land on which the water-shed, between our great Lakes Huron and Superior and Hudson's Bay is situated, does not consist, as some may suppose, of an elevated range of mountains, or even a sharp, well-defined ridge, on either side of which brooks and streams of water descend rapidly in opposite directions. It is really an extensive, and by no means very elevated table-land or plateau. Rough and broken it certainly is with low ridges and hills, interspersed with numerous lakes, especially the southern portion of the plateau, or that part lying nearest to the great lakes. But the elevation of the one, and the depressions occupied by the other, are inconsiderable. The water-shed is usually much nearer to the southern edge or boundary of this plateau than the northern, and the rivers from the point at which they leave the plateau, until they enter Lake Superior, are much shorter and descend more rapidly than those which flow northward into James' Bay. These features are very noticeable in this section of the country.

Ascending Michipicoten River from Lake Superior, about forty miles brings us to the little Stony Portage and Lake Mattagami. In this short distance the fall is not less than 420 feet. From this, the southern edge of the plateau, to the water-parting between Dog Lake and Crooked Lake is about 15 miles, and the difference of level very trifling. For although connected by a somewhat contracted channel, Mattagami and Dog Lakes are to all intents and purposes one lake. In the spring of the year, when the water in all the lakes and rivers is high, there is very little difference of level between Dog Lake and Crooked Lake, and even in summer, the difference does not amount to more than five feet. Now from the water-shed, northward to the northern extremity of Lake Missinaibi, the descent is only about 15 feet, and distance 30 miles. From this point, to what I take to be the northern edge of the height of land plateau, at the foot of the lower swampy ground, is another 25 miles following the bends of the river, but only about 15 miles in a straight line. The fall in this stretch is roughly estimated at from 45 to 50 feet. Thus the whole width of the plateau in a north-easterly direction, or nearly at right angles to the bearing of the water-shed, is 60 miles. Of this 45 miles lie to the north and 15 miles to the south of the water-shed. The difference of level between the two extremities is estimated at 55 feet. The descent southward from the watershed to Stony Portage being, say 10 feet, and northward from the same point to the foot of the swampy ground, being 65 feet. North of the foot of the swampy ground we find rapids and falls in quick succession, until we cross St. Paul's Portage, and arrive at the foot of "Thundering Waterfalls." This stretch, 18 miles in length by the river, is not more than 10 miles in a straight line, and the descent is roughly estimated at 144 feet.

Below this point the Missinaibi River flows, for the most part, through a low, flat country for 25 miles, or until it reaches "the Two Portages." In a straight line this stretch is about 20 miles in length, and the bearing is nearly north. There are several short rapids, but none where portages are necessary, until we come to the point mentioned, which is two and a-half miles below the junction of Brunswick River.

In this stretch the current is generally moderate and water deep. The total fall, inclusive of the rapids referred to, does not exceed 20 feet. About three miles below Thundering Waterfalls, a river seemingly 1½ or 2 chains in width falls in on the west side. This is called Pazhushkootai on Dr. Bell's map. Another two miles further, and the portage to Brunswick Lake takes off on the same side, and five miles below that we come to the Opazatika Portage on the east side. It is obvious therefore, that the River Missinaibi at and below this point, has Brunswick Lake on the west, and Opazatika Lake on the east side.

On the Kapuskasing River, again, at and above the sixth portage, there is a fall in the river of 168 feet in about eight miles. This fall corresponds so closely with that which occurs in Missinaibi River (144 feet) between the lower swampy ground and Thundering Waterfalls, that I am led to believe both descend, either to a lower plateau or steppe; or to the bed of a large and partially drained lake or lakes which at one time covered a wide extent of country, and probably included both Brunswick and Opazatika Lakes. This lake may have stretched considerably to the eastward of the Kapuskasing River, but it is not probable that it extended far west of Brunswick Lake, for the surface seems higher in that direction, and the Indians say that there is comparatively little muskeg or swamp in the country lying to the west of Brunswick Lake.

Another noticeable feature as we descend northward is, that the hills which at or near the water-shed, rise to a height of three, four, and in some instances five hundred feet above the level of the plateau, fall off so rapidly in number and elevation that before the northern limit of the plateau is reached, a hill or ridge over 150 feet in height is rarely to be seen. On the other hand the lakes which cover such a great area on the Height-of-Land Plateau, decrease in number, size and depth as we approach its northern limit; and this is the more remarkable the further north we go. In Lake Opazatika for instance, the water was nowhere more than 42 feet in depth where tried by us, and I doubt if Brunswick Lake is very much deeper. On Grassy-Point Lake, still further north, we obtained no soundings which showed more than from 10 to 20 feet, but in the spring the water is doubtless somewhat deeper.

While ice jams are of frequent occurrence in the lower stretches of all the rivers which flow into James Bay, I have not met with many very decided indications of these phenomena in this part of the territory. There is no doubt, however, that all the rivers and streams are, more or less, liable to occasional obstruction by ice, drift-wood or land slides in the spring; and in view of such possibilities, settlers should be careful to select sites for their dwelling houses where they will be in no danger whatever from the floods thus occasioned.

Character of the Land.

In that part of the Height-of-Land Plateau, lying to the south of the outlet of Lake Missinaibi, but a small portion of the land is arable.

It must not, however, be assumed that it is therefore worthless. For, though unfit for the growth of grain, or even root crops, much of it will afford tolerable good pasture, and almost all of it is suitable for the growth of forest trees of more or less importance and value. Even the areas occupied by lakes, marshes and swamps must sooner or later become valuable. As was pointed out in my report for 1883–4, p. 64, the lakes on this plateau, under intelligent methods of fish culture, may, in the near future, be made to yield food equal in value, acre for acre, to that which can be realized from the arable land. The swamps, too, can be drained, and will then become arable, and large areas, both of marsh and muskeg, can be reclaimed, and made available either for cultivation, pasture or the growth of timber.

In the northern part of this plateau, from the outlet of Lake Missinaibi to the foot of the lower swampy ground, there is, I think, a larger proportion of good land. The swamps are still numerous and extensive, but the lakes occupy a smaller area, and there is less rocky and stony ground. This belt is about fifteen miles in width, in a northerly direction, and extends from the Missinaibi River eastward to the Kapuskasing River. So far as my explorations enable me to form a judgment I consider that one-fourth of part of this belt may be arable, and a still larger proportion of the land suitable for pasture.

Between the northern limit of the Height-of-Land plateau, and that immediately below it, (which we may call the intermediate or central plateau), a narrow strip or belt of some ten or fifteen miles in width occurs which differs in some respects from both, and cannot properly, therefore, be classed with either. In passing through this strip or belt, which commences at the foot of the lower swampy ground and terminates at the

foot of the Thundering Water Falls: the Missinaibi River, as stated elsewhere, descends not less than 144 feet, and the Kapuskasing River some 32 miles to the eastward, in passing through, what I conceive to be the same belt, descends about 168 feet. Though perhaps somewhat less sudden, there is, I believe, a corresponding dip or descent northward in the general surface of the ground. If this fall takes place in ten miles it would amount to fourteen and a half feet per mile in the one case, and nearly seventeen feet per mile in the other. Now the descent in the Height-of-Land plateau above being only one and a half foot per mile, and in the central plateau below about three feet per mile, it is obvious that even if the descent in this intermediate belt be no more than twelve feet per mile, it is eight times that of the Height-of-Land plateau, and four times that of the central plateau below. From this great difference in the slope it follows that the natural drainage should be exceptionally good, and that the proportion of arable land should be exceptionally great in this strip or belt.

This inference is justified by the facts, so far as known to us, and these facts in turn serve to explain the difference of opinion between Mr. Gamsby and myself in regard to the quantity of arable land in the adjacent plateau. The engineers and explorers of the Canadian Pacific Railway Company, under the guidance of Indians evidently well acquainted with the topographical features of the country, have, apparently, run their most northerly exploratory line almost entirely within this belt, from the point where it crosses the Missinaibi River eastward to the Kapuskasing River. Hence Mr. Gamsby has been led to state in his report "that in the section between the Missinaibi and Kapuskasing Rivers, thirty two miles in length, and probably from thirty to sixty miles in width from north to south, *fully seventy per cent. of the soil may be classed as very good*," an estimate which appears to me too high.

It was this favourable estimate of Mr. Gamsby, made doubtless in perfect good faith, and founded on what he saw and heard of the country in the immediate vicinity of the line, which led me to hope that we should find here one of the finest and most extensive tracts of arable land in the territory. And to place this matter beyond doubt, and to be able to advise the Government as to the best mode of opening up to settlement a tract so valuable, were the principal objects of my explorations this season.

I have already given my opinion in reference to the character of the country lying to the south, and will now proceed to describe to the best of my ability, the character of the land and soil in the great central plateau lying immediately to the north of this belt. As was stated in the narrative of our explorations, with which this report is prefaced, the point where Mr. Gamsby's line crosses the Kapuskasing River is about seven miles below the outlet of Lake Kapuskasing. This is not far from the southern edge or boundary of the intermediate strip or belt, its lower or northern limit being at the foot of the sixth portage. Below the sixth portage we enter upon the central plateau, and the character of the river and of the adjacent land changes materially. The descent in the river does not amount to more than 20 or 25 feet in the next 18 miles that we continued to follow it, and my guide says that for at least 10 miles further there is little or no fall. The current is slow, the water deep, and the immediate and visible banks are low. Bottom land, which is neither very common nor of great extent in the plateau above, and still less so in the intermediate ten mile belt, now spreads out on both sides. These river bottoms, at first, are so far elevated above the river as to be flooded only when the water is at its height during the spring freshet. The soil is a fine sandy loam, and if not suitable for grain, on account of the floods, would grow good root crops, and make fine meadows. The timber is too heavy on these bottoms to admit of the higher banks beyond being seen at any point. I am of opinion, however, that these alluvial flats are bounded by such banks for at least five miles, or until we come to the seventh and last portage. I landed and went back on the west side, about a mile before we came to this portage, and in a few hundred yards came to this bank. It was about 40 feet in height and led up to the plateau. The soil was dry and of a somewhat light and sandy nature, but carried good sized and healthy timber, chiefly spruce, white birch and cedar, some of the trees being from 50 to 60 inches in circumference. Below the seventh portage the river bottoms become gradually lower, still widening, however, as we advance. At length the

banks begin to be swampy in places, and finally marshy by the time we arrived at Kajee-wa-ta River, where the route to Lake Opazatika takes off. My opinion is, that the Plateau, on both sides of the river, has gradually decended until it is very little if at all higher than the immediate bank of the river. This portion of the plateau at any rate has, I feel convinced, at one time been occupied by a lake, which extended westward to and included Lake Opazatika. Where its northern and eastern banks or limits may have been cannot even be conjectured, the country in both directions being so low and flat. My impression is, however, that this lake, while covering a large surface, has been exceedingly shallow, and so full of islands that the dry land may have been nearly equal in extent to that which was submerged. In fact, exhibiting on a larger scale the leading features presented by Lake Opazatika at the present time. This (Opazatika) lake consists of a number of sheets of water, connected with each other by channels, but so crowded with islands that in the summer (when the water is low) it has rather the appearance of being half a dozen small lakes than of a large single lake. As the water is still further drained off by the gradual wearing away of the barriers at its outlet Lake Opazatika will eventually present very much the same features as the country lying between it and the Kapuskasing River now presents. We will find numerous areas of dry land (once islands) surrounded, not by water, but by swamps more or less heavily timbered, and interspersed with marshes and small lakes or ponds.

In crossing over from Kapuskasing River to Lake Opazatika we passed, for the first six miles, through small lakes and marshes and their connecting creeks. Recent fires had burnt off both timber and soil in many places, and left more than the usual proportion of bare rock exposed. Altogether this tract did not present a very inviting appearance. Of the remaining seven miles nearly five consisted of portages over drier areas, which, as above mentioned, I conceive to have been at one time islands. On the first portage (two miles in length) the land, with the exception of a small muskeg about a quarter of a mile wide, is arable and of fairly good quality. The soil is a sandy loam in most places, but under the muskeg it was clay. It bears good sized and healthy mixed timber throughout. I noticed a number of spruce from four to six feet in circumference, and many good sized balsam, birch, aspen, with some few poplar. Bush maple, mountain ash and alder formed the underbush, and wild gooseberries and currants were not unfrequently observed.

On the second portage, which was two and a half miles in length, both soil and timber at the eastern end are good. The soil is a clay loam. The timber consists of aspen, birch, cedar, spruce and balsam of large size. Midway this portage also crosses a muskeg, with sphagnum moss underlaid by peat, and bearing a poor growth of tamarac and spruce. At the west end we again found better soil and larger timber, but neither was as good as at the east end.

Spruce, cedar and tamarac line the banks of the creek and marsh through which the remaining three miles of the route passes before we enter Opazatika Lake.

I had hoped to find Lake Opazatika surrounded by the fertile belt, which Mr. Gamsby had reported as occurring between the Missinaibi and Kapuskasing Rivers, and attaining, as he supposed a width of from 30 to 60 miles, in a north and south direction. Hence I had made it my principal objective point in this season's explorations.

If my expectations had been fully realized, in respect of the fertility and extent of the arable land, it was my intention to have sent one of my canoes back to the Hudson Bay Company's Post at Missinaibi, for a further supply of provisions, and to have remained here making excursions in different directions for at least a month or more. It will be seen, however, from what has already been said on this subject, that when we descend from the higher and drier belt (within which Mr. Gamsby's line is situated) and enter on this lower or central plateau, although the soil may be just as good, so much of the land is swampy or marshy that a comparatively small proportion can be called *arable*.

As viewed from the water the shores of Lake Opazatika, and most of the islands, present a rocky and rather barren appearance, but the very general and healthy growth of aspen-poplar is indicative of a tolerable good soil.

On examination this proved to be generally the case, the bare rock rarely rises far above the high-water level of the lake before it is covered with a good depth of soil. This is usually the light coloured clay, or clay-marl, so common in this territory. In some places a sandy or gravelly loam is found overlying the clay. There are several rocky ridges from one hundred to one hundred and fifty feet in height, and on the top of these limited areas of bare rock are exposed, but the slopes are almost always clothed with timber. These ridges occur only on the north-western and western sides of the lake. I ascended two or three of the highest in the hope of being able to get a view of the surrounding country, but the growth of timber, and the thickness of the foliage would only admit of very partial glimpses being thus obtained.

As stated in the narrative of our explorations, John Driver, one of my party who possessed some practical experience, was left to explore this Opazatika Lake while I descended the Opazatika River to Lake Na-sko-se-wa-kan or Grassy-point Lake. His report is of sufficient interest to justify its insertion, especially as I was able to verify it in many important particulars, and have every reason to believe it quite reliable.

It is in the form of "a diary," giving me an account of his daily work during my absence, and (with a few verbal corrections which do not alter the sense) reads as follows:

July 17. "My first days work was up the Grassy River. This river comes in from the south at the middle of the narrows, between the lower and middle Opazatika Lakes. Its general bearing is north and south. The banks are very low and marshy, with a fine growth of blue joint grass on both sides, from four to five acres in width, and extending six or seven miles up the river. This stretch of the river is from two to three chains in width, with no perceptible current. The water is of a dark-brown colour and quite deep. Two miles up I came to a creek which comes in from the north-east and I followed it, shoving my little canoe through the rushes. In about three-quarters of a mile it brought me to a small lake about a mile in length, with the same fine looking grass on the north side. The timber is mostly tamarac, poplar and spruce. The south side of the lake is bordered with gneiss rock forty or fifty feet high, and this is ribbed with small veins of quartz. I did not notice any minerals in them. I landed here and went back a mile to see the soil. The rock does not go far. At half a mile the ground falls away gradually. The subsoil is a grey loam sixteen to eighteen inches deep, and rests on a bed of calcareous clay. The timber is aspen-poplar and white birch, and some spruce quite large. After getting dinner I came out by the same creek that I went in by and came to the Grassy River again. In about one mile more I came to the upper route to the Kapuskasing River. It looks to me to be much the same as the one we followed. The banks of the river are still low, and there is no perceptible current. Here the river takes a turn to the west, but soon comes back to the south again. One mile more and the ground begins to rise and the current begins to show, as the river gets narrower. Cedar begins to overhang the banks of the river, otherwise the timber is the same as it was at the little lake, and the soil is also the same. One mile and a half further the bank on the west side is about ten to fifteen feet high, and on the east side the ground is low and looks to me to be a swamp or muskeg. For some distance here no rock is met with on the Grassy River. At 2.30 p.m. I came to an obstruction of drift-wood which extended about half a mile up the river, and we could not get over it without carrying our canoe. After examining the soil and timber, which I found to be the same, I turned back here. At a steady speed of about three miles an hour it took us till 6.30 p.m., or three and a half hours, to get back to camp."

July 18. "I started at 6 a.m. on the south-east side of the middle Opazatika from our camp to the point on which the Indian camp is situated, its bearing is 20° east of south, and distance three-quarters of a mile. The depth of water across this stretch is from two to eight fathoms. Then south one mile the shore is sandy and gravelly, with quite a number of fossils. The bank is clay some ten to thirty feet high. Then rounding this point the course is 10° east of south one and a half miles. This is a sandy beach all the way. Then the bearing is west. The beach here is bouldery, with some

small pieces of limestone. The bank is low, from six to ten feet high, and is of a calcareous clay. After rounding a number of small bays and points the bearing is north for about two miles. This west side of the lake is all rock, which I take to be gneiss, with large trap dykes. The gneiss is mostly ribbed with quartz, running in every direction. Most of the boulders I took to be diorite. The timber is chiefly aspen-poplar, white birch, spruce, and a few small red pine. The depth of water is from four to five fathoms in this middle lake, and the number of islands, big and little, is twenty-five. In this portion of the lake the bearing is north-east and south-west, and the length five miles.

July 19th, being Sunday, I moved the camp to the island, south-west one mile from our old camp. July 20th, I started at six a.m., and entered a narrow channel leading to the south-west arm of the lake, called by the Indians, the south end of Opazatika Lake. This channel is about a quarter of a mile in length, and bears south-west. The water is very shallow, not more than from four to six feet deep, when I went through it. I then coasted along the east side, and in half a mile, came to a high rock some 70 or 100 feet in height. This rock is gneiss, with large veins of quartz, bearing generally north and south, and a large trap dyke. I have met with this dyke in several places; its bearing is north and south, and the width about 100 feet; its colour is dark blue. There is no apparent change in the rock for about one mile south, but I could not get ashore in some places. I found some fossils along this shore. At the south end of this arm of the lake I came to another channel half a mile long, and bearing south. "This channel is about four chains wide. I then came to a lake about three-quarters of a mile long and one-quarter of a mile wide. The bearing of this lake is a little west of south. At the south-west end there is a good sized river which my guide George ————, informs me, is called Opazatika River. He further says that the Indian hunters have a way of going to a good sized lake some two or three days travel up this river. As far as I could see the banks seem to be very low and grassy. The bearing from the mouth is south-west as far as I could see up it. I then made my way homeward, coasting the west side. On this side the rock is the same as on the east side, only much higher. All the north-west side or end of this arm the ground is low, with a very healthy looking growth of fine aspen-poplar, white birch and spruce. The soil is of a black loamy nature, from 20 to 24 inches deep, resting on a bed of calcareous clay. The depth of the water is about seven fathoms. This arm is about two and a half miles in length, and one mile in width. The bearing is S.S.E. and N.N.W. I now returned to camp the same way as I came.

July 21st, started at six a.m., going through the east channel to the north arm which the Indians call the North Opazatika. This channel is full of islands, so I took the east route. This east side is rocky. It is gneiss rock and full of felspar. The shore is bouldery, some diorite and some small pieces of limestone. I found quite a number of fossils. The bearing of this channel is N.N.W. one and a half miles, and from fifteen to twenty chains or one-quarter of a mile wide. We then came to two small islands, the first one the Indians call Iroquois Island and the next is Green Island. On the north side of this last is a large vein of felspar ten feet in width. Its course is east and west and it dips south at an angle of 70°. The east side of this arm is all rock, but not more than ten or fifteen feet high, and consisting of felspar with veins of quartz. The beds of gneiss all have the same bearing or strike, namely, E. and W. Along this shore I got lots of fossils and some small pieces chert. The rocks are covered with a good depth of good soil, and the timber is principally aspen-poplar, spruce some white birch and a few red pine. At the north end I went back from the shore about half a mile to a high barren gneiss ridge some 200 feet above the level of the lake. In this rock I saw a large vein of quartz twelve feet wide, and full of white mica. The west side has been run over by fire some ten or twelve years ago. The soil on this side is clay, and seemingly good. The bearing of this arm is ten E. of N. and ten W. of S. It is three miles long by one wide. The depth of the water is from three to four fathoms. I then came through the west channel which runs south-west and north-east. Following this channel I entered the middle lake at a point called Bob's Shanty, and thence turned eastward through the islands to the camp.

July 22nd, I started at seven a.m. to examine the islands, and found them to be well timbered with aspen-poplar, white birch, spruce, cedar and some red pine. These islands

are rocky all around the shore, but on going inland I found them to be covered with good soil and quite level. The most of them have from twenty to thirty acres of good tillable soil on them. One or two contain over 100 acres. In the whole of the lake there are forty-one islands big and little. Finishing my exploration of the islands I returned to camp and found that you had got back from your trip down the Opazatika River.

I cannot see any reason why this part of the country should not be suitable for farming, as the fine grass growing on the meadow land on the borders of the lakes and rivers shows that the soil is good and rich, and tends to good vegetation. The green and healthy looking growth of timber shows that there is nothing wrong about the climate. The shortness of the season is the only drawback that I can see. An old hunter (Bob. by name) told me that he had planted some potatoes on one of the islands in the middle of the lake (which I call Garden Island) in June, and returning to his hunting ground in the fall he found a good crop and a much larger yield than he expected. This shows that roots would do well, and I have no doubt that the hardy sorts of grain would do well also. As for meadow land or rich pasture for cattle or sheep, there could not be better. In traversing the lakes I was surprised to see the large shoals of fish. My guide George told me that these lakes abound with fish. I got some white fish from an Indian and found them very good. I am told that there is white fish, herring, pickerel, pike and suckers in this lake, and that the Indians catch them with nets all the year around."

Extending along the banks of the River Opazatika from where it issues out of the lowest lake Opazatika, to the junction of Big River, there is an almost unbroken belt of land on each side which is more or less arable. The distance between these points is roughly estimated at about twenty-five miles. North of this junction as far as I went, say about twenty-three miles, the country is so low and swampy that there is very little arable land either contiguous to the river or on the shores of Lake Na-sko-si-wa-kan.

The width of the belt of arable land above referred is very variable, as is also the character of the soil. I believe that it nowhere exceeds six miles including the land on both sides of the river, and is frequently less than one mile in width. The soil on the lower ground is usually clay. On the higher it is sometimes sandy or gravelly, and at other times the light coloured clay above referred to. This clay soil when found on ridges or knolls is not always fertile. It is sometimes so indurated and hard as to be almost impenetrable by the roots of trees or plants. This will be alluded to more fully when I come to treat of the subject under its appropriate head. One of the finest tracts of land I saw is situated a little above the second portage, which occurs after the river issues from the lowest lake. From a little pond at this part I went back in a north-westerly direction fully three miles and found undulating land, moderately dry, and a good soil. On the lower ground the subsoil was a clay loam and on the higher a sandy loam. There was more than the usual thickness of leaf mould on these subsoils. The present forest trees consist chiefly of aspen and canoe birch, with some balsam and spruce. None of these trees, however, exceed three feet in circumference. It would appear that the former forest had been destroyed by bush fires and that the present timber had not as yet had time to attain its full growth. The original forest has evidently contained many fine cedar, for great trunks six and eight feet in circumference may still be seen rotting on the ground.

John Driver, who made an excursion inland, on the opposite side of the river, reported that he also found a belt upwards of a mile in width of good land. The land on the eastern side of the river is on the whole, however, lower, and the arable belt narrower than on the west. But in both directions we always came at last to muskegs or swamps.

On the portages (about three miles in length) between Lake Opazatika and the Missinaibi River, the land is mostly dry, and, if not arable, would if cleared and laid down to grass, afford excellent pasture. I think, however, from the healthiness, size and character of the timber that much of the land on the first or most easterly portage may be fairly classed as arable; notwithstanding that the soil is somewhat light and sandy on the higher and drier portion. The second portage strikes the Missinaibi River about ten miles below Thundering Water Falls. Between this and the junction of Brunswick River (about twelve and a half miles lower down) we

made several excursions inland on the east side, with the intention of ascertaining the nature of the country lying between the Missinaibi River and Opazatika Lake and River.

Although we selected what we thought the most likely points, we only partially succeeded in our object. After ascending and crossing a low ridge, the soil on which was dry and fertile, the land fell away or descended towards the east, and in less than a mile from the river we always came either to swamp or muskeg. In these muskegs the walking was so bad that we were unable to penetrate anywhere further than about four miles. Thus, whether we tried to penetrate eastward from the Missinaibi River or westward from Opazatika Lake and River, the result was that our further advance was stopped by muskegs. It would appear from this that with the exception of a somewhat limited belt of arable land on the eastern or Opazatika side, and a similar but much narrower belt on the western or Missinaibi side, the intermediate country is either swampy or muskeg. In these muskegs and swamps we met occasionally with more elevated spots which were drier, and bore a larger and better growth of timber. These must, I imagine, have been islands in the lake which once, in all probability, overspread this part of the country.

Above or to the south of Opazatika Portage the banks increase in height and the land becomes drier on the east side as we ascend the river until we arrive at Thundering Water Falls. The soil is in some places, however, seemingly light and sandy. But I have no doubt that there is a much larger proportion of arable land in this stretch than in that below the Opazatika Portage.

On the west side of Missinaibi River from Thundering Water Falls to the south end of Brunswick Lake there is also, I believe, a considerable portion of dry, and more or less arable land. From that to the junction of Brunswick River there is a tract of low lying land, most of which is doubtless flooded for a short time in the spring, and some of it is probably at other seasons. But there is, notwithstanding, I am pursuaded, a large proportion of this land which has a good soil, and will be valuable for hay and pasture, if not also, for root and grain crops.

In that portion of the central plateau which I have examined this season, I do not think, we should be safe in assuming that more than one-third part is arable in any reasonable sense of the term.

All the Indians agree in saying that west and south-west of Brunswick lake and river, there is a large tract of country in which there are very few muskegs, and where the aspen is the principal forest tree. It would be desirable in my opinion to have this section examined. I think it might be done without much difficulty or expense very early in the season when all the rivers and creeks are more or less navigable. If any considerable body of arable land should be found there, it could be opened up for settlement as easily, if not more so than that which is the subject of this report.

Nature and Origin of the Soil.

In the preceding description of the land reference has been made in very general terms, only, to the composition of the soil. I shall therefore, under this head, enter more fully into this important branch of the subject. Notwithstanding the extent of the surface overspread by lakes, marshes, swamps and peat mosses, we have seen that there still remains in this central plateau a very large quantity of dry land, and also, that this land supports a more or less vigorous growth of trees and shrubs. These facts alone, however, will not enable the Government to form any reliable opinion as to the value of the country from an agricultural point of view.

Every pioneer knows, that the description, size and healthiness of the natural forest afford, presumptive evidence at least, as to the character of the soil as well as of the climate. But there are few settlers in the western parts of our Province, who do not also know that whole groves and forests of Canada's favorite tree, the sugar maple, may be found growing, and that vigorously, on land that is not really arable. Or at all events on land which can only be rendered fit for cultivation at a cost, for the removal of

boulders and stones, that would in all probability, reclaim and render arable an equal area of swamp or muskeg. So far as my experience goes, the sugar maple, the black birch and the elm, are found in only a very few places north of the watershed. The oak and the beech I have never met with.

The deciduous or leaf-bearing trees on which we are compelled to rely, as affording any indications of a favourable nature, are the aspen and the white birch. Of these, the aspen is I think, the better guide, although greatly inferior to and less reliable than the maple. The aspen may be found not only on land that is too stony, but on soils so thin as to be barely if at all arable. A few inches of leaf mould on a stiff clay, or even a poorish sandy or gravelly soil, if neither too wet or too dry, is all that it would seem to require. Again, on what appears to the eye at least, exactly the same soil and under precisely the same circumstances, we may find on one area, a growth consisting almost entirely of aspen, and on another entirely of spruce. The explanation of this, is I believe, to be found in the fact, that spruce will grow on any soil in this territory, with the exception of the dry and light sandy soils, and that in a sort of rotation, it occupies the better class of soils, alternately with the aspen.

The *rotation* here alluded to, is I imagine, from the appearance of the forests, somewhat of the following nature. First course, aspen with some spruce, canoe birch and balsam. Second, spruce with some birch and balsam. Third, spruce, with ground more or less foul with rotting timber, the remains of the aspen, birch and balsam, and ultimately becoming damp, cold and sour with an increasing thickness of sphagnum and other mosses. Fourth, bush-fire, which burns up the remaining spruce and rubbish, destroys the moss, neutralises the sourness of the soil with the alkali of the ashes, and allows the earth again to receive light and heat and air. This soon leads to a new and healthy growth of aspen, etc. But if fire should not come, thus to redeem the soil, the sphagnum moss will obtain full and complete victory over the spruce, and convert what may have been fine arable land into peat mosses or muskegs. If the land is of a level nature with a clay soil or subsoil, it would seem to me, that in this climate nothing but the intervention of fire or of man can prevent this degradation of the soil, if it may be so termed, taking place. I shall not endeavour to explain, how it is, that in this struggle, as it may be called, for the possession of the ground, the spruce prevails over the aspen, only in turn, to be vanquished by a green moss which spreads as a carpet over the earth. My object here is simply to point out, that although the existence of fine healthy aspen may be, and perhaps generally is, an indication of a tolerable good soil—its absence, on the other hand, does not entitle us to infer that the soil is on that account worthless.

Some geologists and farmers attach too much importance, I think, to the nature and composition of the underlying or bed rock. It is quite true, that in many parts of the world, the origin of the soil is such that its fertility depends almost entirely on the character of the rock immediately below it. But to this rule there are very large exceptions, especially in this country. I am persuaded that over the whole of this great central plateau, the character and composition of the bed rock has little more to do with the fertility or otherwise of the soil, than has the underlying rock at the mouth of the Mississippi to do with the fertility of the rich soil of the deltas there formed and forming.

The origin of those soils which partake of the mineral character and composition of the rocks on which they rest, is so well described by an able and judicious writer (Professor Johnson), that it may not be out of place to quote his remarks on this subject.*

" If we dig down through the soil and subsoil to a sufficient depth, we always come sooner or later to the solid rock. In many places the rock actually reaches the surface, or rises in cliffs, hills or ridges far above it. The surface (or crust) of our globe, therefore, consists everywhere of a more or less solid mass of rock overlaid by a covering, generally thin, of loose materials. The upper or outer part of these loose materials forms the soil.

" The geologist has travelled over great part of the earth's surface, has examined the nature of the rocks which everywhere repose beneath the soil, and has found them to be

*Elements of Agricultural Chemistry and Geology, pp. 65, 66, 67.

very unlike in appearance, in hardness and in composition—in different countries and districts. In some places he has met with a sandstone, in other places a limestone, in others a slate or hardened rock or clay. But a careful comparison of all the kinds of rock he has observed, has led him to the general conclusion that they are all either sandstones, limestones, or clays of different degrees of hardness, or a mixture in different proportions of two or more of these kinds of matter.

"When the loose covering of earth is removed from the surface of any of these rocks, and this surface is left exposed, summer and winter, to the action of the winds and rains and frosts, it may be seen gradually to crumble away. Such is the case even with many of those which, on account of their greater hardness, are employed as building stones, and which, in the walls of houses are kept generally dry, how much more with such as are less hard or lie beneath a covering of moist earth, and are continually exposed to the action of water. The natural crumbling of a naked rock thus gradually covers it with loose materials in which seeds fix themselves and vegetate, and which eventually form a soil. The soil thus produced partakes necessarily of the chemical character and composition of the rock on which it rests, and to the crumbling of which it owes its origin. If the rock be a sandstone, the soil is sandy—if a claystone, it is more or less stiff clay—if a limestone, it is more or less calcareous—and if the rock consist of any peculiar mixture of those three substances, a similar mixture is observed in the earthy matter into which it has crumbled.

"Led by this observation, the geologist, after comparing the rocks of different countries with one and other, compared next the soils of various districts with the rocks on which they immediately rest. The general result of this comparison has been, that in almost every country the soils have as close a resemblance to the rocks beneath them as the loose earth derived from the crumbling of a rock before our eyes bears to the rock of which it lately formed a part. The conclusion, therefore, is irresistible, that soils, generally speaking, have been formed by the crumbling or decay of the solid rocks—that there was a time when these rocks were naked and without any covering of loose materials—and that the accumulation of soil has been the slow result of the natural degradation or wearing away of the solid crust of the globe."

Further on, however, at page 88, Professor Johnson cautions his readers in reference to the more common exceptions to this intimate relation between the fertility of the soil and the composition of the bed rock as follows: "It is necessary to guard the reader against disappointment when he proceeds to examine the relations which exist between the soils and the rocks on which they lie, or to infer the quality of the soil from the known nature of the rock on which it rests, in conformity with what has been above laid down—by explaining another class of geological appearances which present themselves not only in our own country but in almost every other part of the globe.

"The unlearned reader of the preceding section and chapter may say—I know excellent land resting upon the granites, fine turnip soils on the Oxford or London clays, tracts of fertile fields on the coal measures, and poor gravelly farms on the boasted new red sandstone. I have no faith in the theory—I can have none in theories which are so obviously contradicted by natural appearances. Such, it is to be feared, is the hasty mode of reasoning among too many locally excellent practical men—familiar it may be with many useful and important facts, but untaught to look through and beyond isolated facts to the principles on which they depend.

"Every one who has lived long on the more exposed shores of our island, has seen, that when the weather is dry and the sea winds blow strong, the sands of the beach are carried inland and spread over the soil, sometimes to a considerable distance from the coast. In some countries this sand-drift takes place to a very great extent, travels over a great stretch of country, and gradually swallows up large tracts of fertile land. Again, most people are familiar with the fact, that during periods of long continued rain, when the rivers are flooded and overflow their banks, they not unfrequently bear with them loads of sand and gravel, which they carry far and wide, and strew at intervals over the surface soil.

"So the annual overflowings of the Nile, the Ganges, the Mississippi, and the river of the Amazons, gradually deposit accumulations of soil over surfaces of great extent—and so also the bottoms of most lakes are covered with thick beds of sand, gravel and clay which have been conveyed into them from the higher grounds by the rivers through which they are fed. Over the bottom of the sea, also, the ruins of the land are spread—torn by the waves from the crumbling shore, or carried down from great distances by the rivers which lose themselves in the sea—and form beds of mud, or banks of sand and gravel of great extent, which cover and conceal the rocks on which they lie.

"To these and similar agencies, a large portion of the existing dry land of the globe has been, and is still exposed. Hence, in many places, the rocks and the soils naturally derived from them are buried beneath accumulated heaps or layers of sand, gravel and clay, which have been brought from a greater or less distance, and which have not unfrequently been derived from rocks of a totally different kind from those of the districts in which they are now found. On these accumulations of transported materials a soil is produced which often has no relation in its characters to the rocks which cover the country, and the nature of which soils, therefore, a familiar acquaintance with the rocks on which they immediately rest would not enable us to predict."

Now, although no direct mention is here made of the agency by means of which this prodigious mass of loose material has been transported, Professor Johnston shews so plainly what has occured in this territory, that it may be described almost in the very words employed by him. The rocks mostly gneiss are buried, as he says, beneath accumulated heaps or layers of sand, gravel and clay which have been brought from a greater or less distance, and derived from rocks of a totally different kind from those of the plateau, on which these transported materials are now found reposing. And we are therefore warranted in coming to the conclusion, that on these accumulations of transported materials the soil produced has no relation whatever in its character or composition to the rocks which are "in situ" on the plateau itself. This loose or transported material has unquestionably been brought from the north. Some of it has come from the shores of Hudson's Bay.

The far greater portion of it, however, has been furnished by the Silurian and Devonian strata underlying the great plain, which stretches southward and westward from the coast, to within a short distance of the northern edge of this central plateau, and from which it is separated by an intermediate belt similar to that which has been already described as intervening between the height-of-land plateau, and the central plateau.

These stratified and comparatively soft rocks have not only been torn from their beds and transported a great distance; but have been, for the most part, ground to an impalpable powder. I have, in former reports, expressed my firm belief, that the agent by which this has been accomplished is undoubtedly *ice*, which, in a sheet probably several thousand feet in thickness has moved southward, very slowly it may be, but with irresistible force. This has occurred during what geologists call the glacial epoch, era or period and the transported material is known under the name of the drift or boulder formation. The earthy matter of the soils on the central plateau is composed almost entirely of this transported material or drift, as is that of the soil on the height-of-land plateau, with this difference, namely, that whereas the "drift" of the former has been furnished almost entirely by the Silurian and Devonian strata to the north, that found on the height-of-land plateau, is composed in part only of this material and of an equal or larger proportion of material derived from the Laurentian and Huronian rocks. It may be that this has come from the Laurentian rocks which underlie the central plateau, and in a lesser degree from those *in situ* on the height-of-land plateau itself. The drift of the central plateau has been deposited chiefly in the form of light grey or drab coloured clays. These contain such a large proportion of lime, that they may be properly termed marls or calcareous-clays. The drift sands are usually somewhat fine and soft and might sometimes be called loamy. They are generally of a light yellowish or reddish colour. Occasionally these sands are highly calcareous, and they are then very fine and soft and of a white or very light grey colour. The gravels on this Central Plateau

almost invariably contain pieces of limestone, chert and sandstone, which can be identified as coming from the Devonian and Silurian strata to the north. These pieces, which are found on the height-of-land plateau also, increase both in number and size as we cross these plateaux going northward and they frequently contain characteristic fossils. Drift-boulders are not, I think, nearly so numerous on the Central as on the height-of-land plateau.

If the soils on both these plateaus had derived their inorganic or earthy material entirely from the decomposition of the Laurentian and Huronian rocks on which they rest, they would doubtless have been thin, poor and barren as such soils usually are. Some of the important elements of all good soils, more particularly lime, would in all probability have been deficient if not entirely wanting. Hence, the great importance I attach to the fact, that nearly all the earthy matters of the soil on this central plateau and a considerable proportion of the like constituents in the soil of the height of-land plateau, have been supplied by the stratified limestone and other rocks lying to the north and afford abundance of lime, silica, alumina, magnesia, oxide-of-iron and other substances, more or less necessary in all good soils. This observation applies not only to the soils on and beyond the height-of-land, but to the soils on the north shores of Lakes Superior and Huron, which have, I believe, derived no inconsiderable proportion of their calcareous matter and probably other important elments from the same source.

The stratification of these drift deposits is very imperfect, and altogether unlike that which has been effected by water, whether it be on the banks of rivers or in lake basins. In the order of super-position, where such exist, the clays are almost always lowest and found resting on the rock. Where both occur the sand is seen usually overlying the clay ; but there are extensive areas in which little but clay or clay marl can be seen, and other smaller tracts where sand or a sandy loam rests immediately on the rock. Thus the character of the soil is variable. As a general rule, however, sandy or sandy loams are found on the higher ridges, and clay or clay loams on the lower ground. I have no doubt that the resulting soil would have been better had the fine earthy materials been more thoroughly and completely mixed together. This is being slowly brought about by the action of the streams and rivers. Hence the river bottoms and those swamps which have once been the beds of lakes will, in my opinion, afford the richest and most fertile land in this territory.

On the higher and undisturbed parts of the plateau, where the drift has not been exposed to the action of rivers or lakes, those soils in which clay greatly preponderates are so stiff that the land may be difficult, I fear, to work. The clay soil sometimes found in such situations is exceedingly hard and dry. Such land, however, may possibly be converted into good pasture. On the other hand the sandy soils are occassionally too light and dry to be fertile.

I noticed very frequently that the clay at and near the surface contained little or no lime, but on digging down from one to two and a half feet it almost invariably became highly calcareous. I was at first inclined to think that they were parts of different strata or beds, for the change was usually quite sudden. There was little difference in the appearance, excepting perhaps that the non-calcareous or surface clay was a little darker or redder and somewhat stiffer than the lower calcareous clay. I afterwards, however, came to the conclusion that the clay had been uniformly calcareous, but has lost its lime at or near the surface. Whether this has been brought about slowly by percolation of water, by the roots of plants and trees, or by some unknown chemical action, I am at a loss to decide, but suspect that the percolation of rain-water, holding in solution more or less potash and other substances—the result of periodical bush fires during many centuries—may at least be one of the causes of this phenomenon.

The quantity of organic matter in the soil is not, I think, very great, especially on the stiff clays and poor sandy areas on the higher and drier sections. This may be partly attributed, I think, to the following causes : As a rule the death of the trees of our forests results from being blown down and uprooted, as it is commonly termed, by the wind. If the sub-soil be of such a nature as to have invited or even allowed the roots to

penetrate to a considerable depth one effect of wind on such trees must be (by causing them to sway to and fro and strain on their roots) to stir up and loosen the soil for a considerable distance around each tree, thus mixing, it is probable, to some extent the upper vegetable mould with the sub-soil; and when finally these trees are overthrown the roots tear up and overturn large masses of earth, thus incorporating a still further quantity of mould with the earthy matter of the soil below. This continued for hundreds of generations of trees gives the ground periodically a sort of rough trenching which must tend, as it seems to me, greatly to ameliorate and improve the soil. But on stiff clays the roots do not appear to penetrate much below the covering of leaf mould. Thus it happens that when these are overturned no such mingling of the soil takes place. As a consequence of this, when a bush fire occurs the whole of the vegetable mould and other organic matters are burnt up, and little or nothing but the clay sub-soil and a few ashes are left. Whereas in the other case the vegetable mould and organic matter is so mixed up with and protected by the earthy and incombustible material of the sub-soil that much of it is preserved. Hence I conceive it follows that on these indurated and stiff clay soils there is frequently only a thin covering of leaf mould.

There may be and probably are other reasons why the amount of organic matter in the soil is not greater. In other countries various living creatures by their labors and modes of life, greatly assist both in producing and incorporating organic matter with the earthy materials of the soils. All burrowing animals and many insects are of more or less service in this way. Among these the earth-worm is considered in Europe one of the most important. Now, singular as it may appear, the earth-worm, if not entirely absent, is very rarely met with north of the Height-of-Land. Excepting at the Hudson Bay Company's Posts (whither they have been imported) I do not think I have seen a single specimen of the earthworm anywhere between Lake Superior and James' Bay. It may appear absurd to attribute any importance whatever to the influence which creatures, apparently so insignificant and weak, may be capable of exercising, either in the way of adding to or detracting from the depth and fertility of the soil. But on a reference to Dr. Darwin's work "On the formation of Vegetable-Mould through the action of Worms," it will be seen that worms have, as Dr. Darwin says, "played a more important part in the history of the world than most persons would at first suppose."

In previous reports it has been shown that at almost all the Hudson Bay Company's Posts in this territory, both the soil and climate are such as admit of most of our common grains and roots being grown. I may add that I saw this season very good crops of both oats and potatoes at Missinaibi, on the height of land plateau, some thirty miles north of the watershed.

Also on the C. P. R. track near Dog Lake, I saw oats, the seed of which had been accidentally dropped on the gravelly drift soil of the embankments, growing most luxuriantly. Some of the stalks were upwards of five feet in height, and I counted as many as 200 grains on a single stalk. This was on the 2nd of September and the grain was still green but would probably have ripened. Some of that sown at Missinaibi came to full maturity, and all would have done so, had it not been necessary to cut the greater part of it when green for fodder.

The preceding report and what is said elsewhere will enable the reader, it is hoped, to form a tolerably good idea of the leading topographical features of this territory, as well as to some extent of the character of the land and soil in the several belts, into which for convenience it has been divided.

The soil, it will have been observed, is variable; that on the coast belt, with the exception of the river bottoms and islands and a narrow strip on the banks of the rivers, being generally of a peaty character with a subsoil of calcareous clay or "marl."

And that on the height of land plateau, sandy, gravelly or stony, although on the lower grounds the soil, and elsewhere the subsoil, are not unfrequently clay or marl.

It will further have been noted that in my opinion as well as in that of Mr. Gamsby and others, the intermediate or central belt contains a larger proportion of arable land than either of the other two divisions.

In my Report for 1882, p. 10 and 11, an opinion was expressed in regard to the origin of the loose material overlying the rock, and forming both soil and subsoil in the far greater portion of this territory. It was there stated that the evidence was most convincing in support of the hypothesis that almost all of this loose material had been brought from the north and laid down where we now find it, by ice, like that which forms glaciers, but having its source in what has been called a "polar ice cap," instead of in some high mountains or range of mountains, as is the case of the ordinary glaciers.

In order to form an adequate conception, however, of the character of the soil in this territory, and the central belt more particularly, it is important to know somewhat of the mode or manner in which this may have been accomplished.

Assuming then, that during the period known as the "glacial epoch," such an ice-cap as that referred to had formed at and around the north pole, and that this ice-cap had attained such a height that by the sheer force of gravity or pressure from within, a great sheet of ice had been shoved southward down Hudson Bay, and up the ascent or acclivity to, and then over the height of land. And further, supposing that this ice sheet (probably two or three thousand feet in thickness) continued to move for many thousands of years, something like the following effects may not unreasonably be conjectured to have been produced in this territory. In the first place, all the loose material of whatever kind, which then formed the surface, would be at once swept from off the underlying bed-rock, and borne southward, never more to be deposited (in all probability) on that north side the height of land.

This disposed of, the ice with rocks of all shapes and sizes (many hard as adamant) firmly set or imbedded in its substance, would in the next place attack the fundamental or bed-rock. When we consider that the downward pressure due to the weight alone of ice two thousand feet in thickness, would be nearly 800 lbs. on each square inch or 57 tons on each square foot of the bed-rock, some faint idea may be formed of its destructive power. Driven forward with irresistible force, this ponderous sheet of ice, bristling, so to speak, with Laurentian and Huronian rocks, from the north, would play tremendous havoc with the soft shales, sandstones and limestones of the coast belt. That countless millions tons of these Palæozoic rocks have been thus torn from their beds and ground into an impalpable powder is to my mind an absolute certainty. That this destruction has not been complete over the whole Palæozoic region south of Hudson Bay, is doubtless, I think, due, as Dr. Bell has pointed out, to the fact "that the dip of the strata happens to be in about the same direction as that which was taken by this great denuding force."* Passing off the southern or upper edge of the Palæozoic strata, the ice-sheet would then enter upon the central or intermediate belt, with its hard Laurentian and Huronian bed-rocks. From the northern edge of this belt to the southern edge of the height of land plateau, no other than azoic and trap rocks are seen "in situ." Before this glacial period the surface of both this belt and the plateau above must, I think, have been very broken or rough, and during the earlier part of that epoch, in spite of the hardness of the rock, an enormous destruction of it, must have taken place. Much of it was doubtless removed in the form of boulders, much of it in the shape of stones, and more or less of it was reduced to the condition of gravel and sand. Where the rocks, first broken up and reduced to these forms, were transported to and finally deposited, is impossible to say. But having (as I believe) found stones on the north shore of Lake Superior which have been transported from Hudson's Bay by this ice-sheet, it seems probable, at least to me, that some of the loose material manufactured, so to speak, on or beyond the height of land may have been transported in like manner to points considerably south of our great lakes.

But whatever may have been the condition of the surface in this intermediate, or central belt, at the beginning of the glacial epoch, it is certain that most of the inequalities were pretty well planed down before the end of it. Those eminences that have remained, whether in the form of isolated hills or short ridges, rarely rising in the central belt more than one hundred and fifty feet above the general level. They are always

* The Geology of Ontario. p. 50.

rounded off by the ice, and present with very few exceptions a sloping face or side towards the north. This feature is even noticeable on the height of land plateau, where the hills are sometimes as much as five or six hundred feet in height, and fifteen hundred above the present level of James Bay. The advantage, so far as the mountains are concerned, of this particular *form*, is one to which, in all probability, they owe their survival in the prolonged struggle for existence against the almost irresistible attacks of this northern ice. A similar arrangement can be observed in nearly all the boulders which, out of many thousands, have maintained their ground in the beds of rivers against the rush of water and ice to which they are exposed every spring. Many of these rocks and boulders may be seen in the summer when the water is low, and exhibit the appearance of a shoemaker's "last," with the toe invariably pointed up the river. All such stones, however, whatever may be their shape otherwise, must, unless of great size and weight, possess one sloping face, and that must be presented so as to meet the descending sheets of ice, which will glide easily over them. Should by any chance such rocks or boulders get turned the wrong way and present to the stream a perpendicular side or face, the descending masses of ice, butting squarely against them, will knock them over and around until they are either got in the position in which they offer the least resistance, or they are crowded to the side and on to the banks, where the great mass of such stones and boulders may be seen. The same peculiar shape noticeable in the boulders and rocks in the beds of rivers is common in the knolls, hills and ridges of solid rock situated in the old-time bed of this all but resistless ice-stream.

It appears to me that so long as this ponderous sheet of ice was in motion, no deposition of loose material could possibly have taken place in any part of the territory now under consideration. It was only when this motion ceased that deposition in the proper sense of the term, can, I think, be held to have begun. And then it was only the loose material, held in suspension as it were, by that portion of the ice-sheet immediately or almost immediately overlying any particular area, that could be deposited thereupon. Some of this material may have been lost, but I am unable to see how any can have been added, more especially on the height of land plateau, excepting by that slow process of disintegration of the solid rock, which there has not been sufficient to obliterate in many instances the scratches and grooves made by the ice while in motion.

Anything that the rivers and lakes may have accomplished in that respect need hardly be taken into account, for such rocks as we find here are very slowly acted upon by water and as a matter of fact the rivers have unquestionably carried away a great deal more loose material than they have ever made. As an agent whereby the loose material already formed has been re-distributed and modified as well mixed, the waters of our rivers and lakes have doubtless played a most important part, but in the manufacture of the loose material itself, it has been by no means so conspicuous.

Ice on the other hand, does not possess that power, or at least in a very inferior degree.

When the great ice sheet ceased to move it was laden with the spoils of scores of different formations or kinds of rock, brought from Hudson's Bay, the coast belt, and to some extent derived from the belts over which the sheet finally rested. This material would be very different in different places, calcareous in some, sandy in others. In some areas many boulders and in others little but clay. Hence, at the close of the "Glacial Epoch," when the ice thawed and this material was deposited, there was a corresponding difference in the character of the loose material which still largely forms the soil of this territory.

On no other theory is the existence of this loose material, and the position in which it is found, at all intelligible to me.

TIMBER.

Speaking from my own observations, there is not much pine on the central plateau, nor is there a great deal on that portion of the height of land plateau, over which I have passed this season. As stated in previous reports, there are fine tracts of both red

and white pine to be seen on the head waters of all the tributaries of Moose River, lying to the east of Missinaibi River. But on the Missinaibi itself and westward to the Albany River, I have met with only a few groves, chiefly of red pine, and these of no great extent or importance. Such pine as there is will all be needed to supply the local wants of the future settlers in this section.

Red pine is frequently found growing singly or in clumps on the islands and shores of Lake Opazatika, but north of that lake few if any were met with.

Spruce and tamarac may be seen almost everywhere north of the Height of Land. There is no tree however, which possesses in an equal degree the power of adapting itself to all the changes of soil and climate in this northern territory, as the spruce. It is consequently the tree most commonly met with from the moment we cross the height of landuntil we arrive at the coast of James' Bay. On the rich soil of the sheltered river bottoms, it overtops all the other trees and attains a circumference of from six to eight feet. On the coast and islands of James' Bay it still holds its ground, but is greatly dwarfed, the largest trees on Charlton Island being less than half the size of those just referred to. As is reasonable to suppose, the healthiest and largest trees are found on the best soils and in the most sheltered situations. On poor, shallow soils they are of small size and of little or no value. They will struggle for existence even on the muskegs of which with the tamarac they have a monopoly, but are there so small as to be quite worthless.

In the aggregate, there is an enormous quantity of spruce of useful sizes in this territory. But the larger and more valuable timber is confined principally to the river bottoms.

Tamarac is almost coextensive in its growth with the spruce, but it does not attain the same size nor is it nearly so plentiful, excepting on the muskegs where it like the spruce, is stunted, unhealthy and worthless. It very rarely exceeds four-and-a-half or five feet in circumference anywhere. In some of the swamps there would appear to be a good deal of tamarac large enough for railway ties, telegraph poles, coal-pit props and such like purposes.

Cedar is found on the immediate banks of the rivers in many instances where no other trees seem able to withstand the force of the current and the injuries inflicted by ice and driftwood. In such positions the cedar attains a great thickness at the butt, sometimes as much as ten or twelve feet circumference, but it tapers off so rapidly towards the top that it may not be more than thirty or forty feet in height; nearly the whole strength of such trees would seem to have been expended in the development of the roots and trunk. Good, well-proportioned cedar are, however, met with in many places both on the height-of-land, plateau and central belt.

Though of no great economic importance at present, the spruce, tamarac and cedar of this territory must become more and more valuable as those trees of the pine and other species so eagerly sought after by the lumbermen become exhausted in the older parts of the province.

In view of the many important economical uses to which wood-pulp is being applied it is by no means improbable that the aspen-poplar may ultimately become one of the most valuable forest trees in this territory. Pulp made from the aspen is, I have been informed, superior to that of any other wood for the manufacture of paper, and commands the highest price. The climate is congenial, as is also much of the soil. It is common on the height of land, but it is on the central plateau and the banks of rivers which traverse the great plain still further north that the aspen is most abundant. It is more plentiful indeed than any other forest tree in this territory, with the single exception of the spruce.

MINERALS.

The geological formation of that portion of the central plateau to which my explorations have been confined this season is not so favourable to the production of valuable minerals as expected. But however favorable the rock of the country might be, the area

exposed to view is so exceedingly limited, that such minerals or metallic ores as may be contained will, in all probability, be discovered only when the territory is at least partially settled, and then as it were, by chance.

I found, however, an apparently large body of iron pyrites on Big River, one of the tributaries of the Opazatika River. This from its purity and the amount of sulphur it contains, would be valuable in some places, as great quantities of pyrites are used in the manufacture of sulphuric acid. But this deposit, like the iron ores, china clay, lignite, coal, gypsum, etc., mentioned in former reports, cannot be utilized in any way until our northern boundary is definitely settled, and roads made to open up the territory and develop its various resources.

OPENING UP THE COUNTRY.

The Canadian Pacific Railway, west of Biscotasing, may be said to run on the height of land plateau for upwards of 150 miles. It has been located entirely, however, in the southern portion of the plateau

The line does not, at any point known to me, approach nearer than thirty-five or forty miles to the fertile belt lying to the north, and to reach this better land it will be necessary of course to cross the intervening belt of poor country. If this had required at the outset the making of branch lines of railway or even long and costly colonization roads, the difficulty and expense would, I fear, have greatly retarded the opening-up and settlement of the territory. Fortunately, however, nature has provided us with the means which will enable us in the first instance at least, to open up and partially develop this territory at a very moderate expense.

I have frequently mentioned in former reports, that the longer axis of most of the lakes on the height of land plateau have a strong northerly bearing, ranging from north-east to north-west. Many of these afford fine, navigable stretches of water, and by utilizing them, we can easily cross this height of land plateau at many of the more important points. Thus Lake Nipigon affords a 70 miles stretch and Long Lake a 52 miles stretch of uninterrupted navigation. And of navigation which may be rendered continuous at a very little expense. Some 30 miles is offered by Lakes Esnogami and Kabinakagami; 25 miles by Wabatongusheen and Oba Lakes, and nearly 35 miles by Dog, Crooked and Missinaibi Lakes. And there are doubtless other lakes situated on or about the headwaters of the Kapuskasing, Ground-hog and Mattagami Rivers, the navigable stretches on which may be expected also greatly to facilitate the opening-up of the territory north of the Canadian Pacific Railway.

The only route which I shall dwell upon at any greater length at present is that by means of which the section explored this season can, I conceive, be most easily opened-up.

From the point where the C. P. R. crosses Dog Lake, to the north end of Lake Missinaibi, the distance, following the bends of the canoe route is about 35 miles, and the navigation is interrupted only at two places. These are the height of land portage between Dog Lake and Crooked Lake, and Missinaibi Portage between Crooked Lake and Lake Missinaibi. The aggregate length of these portages does not exceed one-third of a mile. The difference of level is so trifling and the portages such that the construction of a canal with one lock (which is all that would be required to complete the navigation) could not be very costly. But from a point on the C. P. R. somewhat east of Dog Lake, a road might, I think, be made to the south end of Lake Missinaibi, which would not exceed, I believe, seven miles in length, and from thence to the north end of the lake, about 26 miles, the navigation is perfect.

The navigation of the river Missinaibi is altogether too difficult and broken by rapids to be of any use in opening up the country to settlement. From the north end of Lake Missinaibi therefore, to the foot of the Swampy Ground, where the fertile belt may be said to begin, a road will be necessary. This road which would be about 15 miles in length might be extended northward to Brunswick Lake and to Lake Opazatika. as settlement advanced. Nor would this fifteen-mile stretch of road pass through a country by any means so barren as that which the railway itself traverses. On the contrary, much of it will be found to consist, if not of arable, at all events of good pasture land

AGRICULTURAL RESOURCES.

In my first report on this territory, then in dispute, a concise account was given of all that could be gathered from the Hudson Bay Company's officer's and other sources on this subject.

Extracts from Report for 1879.

As this report is not accessible to many who may desire information in regard to the agricultural capabilities of this northern territory now that it has become part of the province, it will not be out of place to quote what was there said.

On page 20 *et sequentia*, of the report for 1879-80, the following particulars are given under this head :—

"It is only at the Hudson's Bay Company's trading posts, sometimes called 'forts' or 'houses,' that any farming has been carried on in this territory, and even at these, to a very limited extent, and in a very primitive and imperfect manner. Moose Factory is situated about seventeen miles below the junction of the Moose and Abittibi rivers, and a short distance only from the coast of James' Bay.

"Albany House is situated about one hundred miles north and somewhat to the west of Moose Factory. Rupert's House is about one hundred miles to the east of Moose Factory. Both Albany and Rupert's House are also quite near to the coast of the bay. These explanations are necessary, in order to understand the evidence of Mr. Gladman, before referred to, as having been, for many years, a Commissioned officer in the service of the Hudson's Bay Company, and stationed at various posts in this department.

"Speaking of the crops grown, not only in the territory under consideration, but at East Main and Fort George, much further north, Mr. Gladman says (I again quote from Mr. Russell's work) :

"'That at East Main, Old Factory, he raised good potatoes, turnips, and other vegetables. East Main is sixty miles north of Rupert's House. That a large herd of cattle was kept there at that time as a resource in case of the Company's ships wintering in the bay, an abundant supply of hay being made in the salt marshes on the shores of the bay ; that vetches grow wild on the point of the river, and abundance of strawberries and currants.'

"He says 'that at Big River, a hundred and eighty miles north of Rupert's River, potatoes and other vegetables are grown. That at Rupert's House the soil is much better and the station more sheltered than East Main Factory, or Big River, and more favourable for garden cultivation.' Rupert's House is a little to the east of the boundary of this territory.

"Speaking of Moose Factory, where he resided fifteen years, Mr. Gladman says : 'Its soil and climate are good, that he raised potatoes and other vegetables there in great abundance, that barley ripened well, and that horned cattle, sheep and pigs, were kept there.' He adds ; 'that the soil and climate of Albany, which is a hundred miles further north, does not differ much from Moose, that it is well sheltered, and that the extensive marshes on the coast furnish abundant fodder for domestic cattle.' He also says, 'that the soil around the posts of Henly, Martin's Falls, Osnaburg, and Lac Seul, is of a quality that enables the servants of the Company to raise fair crops of potatoes.'

"At New Brunswick House, about one hundred and forty miles south of Moose Factory, Mr. Gladman says, to repeat a quotation already given, that 'the soil is very good, that excellent potatoes are raised there, also every description of vegetables. Oats ripened well and made good oatmeal, ground with a hand-mill. Wheat was afterwards tried, as he was informed, with good success.'

"Dr. Bell, of the Geological Survey of Canada, in his report on an exploration in 1875, between James Bay and Lakes Superior and Huron, writes as follows :—

"'Farming and gardening has been successfully carried on by the officers of the Hudson's Bay Co. at their posts at Lakes Mattagami and Missiniabi. At the latter, Mr.

John McIntyre, now at Fort William, has informed me that he found spring wheat to ripen well. At Moose Factory, although the soil is a cold wet clay with a level undrained surface, farm and garden produce in considerable variety are raised every year. Among other crops harvested in 1874 were 1,700 bushels of good potatoes. Oats, barley, beans, peas, turnips, beets, carrots, cabbage, onions, tomatoes, etc., are grown without any more care than is required in other parts of Canada, and I was informed that some wheat which had got accidently sown one year was found to ripen, but no experiments, as far as I could learn, have ever been made to ascertain whether this cereal might be regularly cultivated or not. Upwards of eighty head of cattle are kept at Moose Factory, besides horses, sheep and pigs.

"An old man at the Hudson's Bay Company's Post, on Lake Abittibi, and many years a resident in that district, in answer to my inquiries on this subject, stated as follows:—

"'That all root crops and grains grow well. That in one instance from three-quarters of a bushel of wheat sown, twenty-one bushels were obtained, and that one keg of barley gave a return of thirty kegs. That oats grew well, and also buckwheat. That he has known summer frosts injure the potatoes on several occasions, but that generally a large and excellent crop may be depended upon where the soil is suitable. That there was abundance of rain at Abittibi during the growing season, and that when otherwise, it was compensated for by heavy dews at night, so heavy that unless a wind be stirring, the leaves and grass are not dry before ten o'clock in the forenoon.

"It is only right to mention, however, that the gentleman in charge of the post does not corroborate all these statements, but on the contrary, assured me that on two occasions within his experience, oats had failed to ripen. I have been told also by the Hudson's Bay Company's officers and servants at Moose Factory, that oats have failed to come to maturity there; that barley is an uncertain crop, and that even potatoes are liable to be cut down by the frost before they are fully ripe. That these crops occasionally fail is doubtless true, but it would be exceedingly difficult to find any part of the world where the grain and root crops do not sometimes fail. However fine the climate or rich the soil, every intelligent farmer knows that a little too much heat or cold, drought or rain, or the grasshopper, potato-bug, weevil, and such like creatures frequently blast his hopes in reference to one or other of his crops. If mankind, however, had on this account been deterred from reclaiming the earth, and from sowing and planting in the hope of obtaining a return in due season, this continent would still have been a wilderness and its inhabitants in a state of barbarism.

"My own residence in the territory has been too short to allow of my speaking authoritatively on the subject of the crops that can or cannot be advantageously cultivated. I have, however, quoted the evidence of those who have had ampler opportunities and longer experience, and are therefore better able to judge of the capabilities of the territory. I shall, however, give the results of my own observations during the limited period spent in the country, and the conclusions I have arrived at in regard to several of the more important crops grown, or which I think might be successfully cultivated.

"*Potatoes.*—I saw potatoes growing at Hudson's Bay Company's post on Abittibi Lake, at New Post on the Abittibi River, about one hundred miles from James' Bay, and at Moose Factory itself, and from my own observations and inquiries, am convinced that large crops of excellent potatoes may be grown in this territory, and that the crop is as unfailing as in any other part of Ontario I am acquainted with. In 1874 the quantity of potatoes raised at Moose Factory was, according to Dr. Bell, 1,700 bushels. Last year (1878) the crop from the Company's farm was, I believe, about 1,200 bushels, over and above what the servants of the Company raised from small plots of ground which they are permitted to cultivate. The yield would appear to be from two to three hundred bushels per acre. In some instances I was told they had been raised for upwards of fourteen successive years without manure, on the same ground. When we consider that the nutriment afforded by 250 bushels of potatoes is about twice as much as that yielded by an acre of wheat in the most favoured sections of Ontario, the importance of the potato as an article of food in this new territory must be obvious to all.

"*Barley.*—In the quotations cited from the evidence of Mr. Gladman and others, barley is said to ripen well, not only at Lake Abittibi and New Brunswick, in the southern portion of this territory, but also at Moose Factory in the more northerly and exposed portion.

"By the officers at Moose Factory barley was spoken of to me doubtfully, and as a crop, the ripening of which was attended with a good deal of uncertainty. More or less barley, however, is generally sown at Moose, from which I would infer that it usually came to maturity. Two small patches only were sown this year. One of these was just ready for cutting when I left on the 19th of September. The grain was large and plump, and the yield good. The other patch, which was very foul with weeds, was backward, and hardly likely, I think, to ripen.

"Without knowing the mode of cultivation or the nature of the seed, etc., nothing reliable can be inferred from such a limited experience. The past summer, too, has been like that in Great Britain, exceptionally cold and wet at Moose Factory; but with good cultivation and suitable seed, barley should come to maturity at Moose Factory in seasons no warmer even than the last.

"Mr. H. Stephens, F.R.S., one of the highest authorities in England, in his work, 'The Farmer's Guide,' in which he was assisted by Professor Norton of the United States, remarks as follows on the subject (Vol. I, page 448):

"'Barley is cultivated further north than any of the other grains; fields of it are seen growing in the northern extremity of the Orkney Islands and in Shetland (lat. 61° N.), and even at the Faro Islands (lat. 61° to 62° 15′ N). Iceland (63° 30′ to 66° N.) does not produce it, although an industrious population have made every exertion to acquire some species of cerealia.'

"'In Western Lapland the limit of barley is under 70°, near Cape North, the northern extremity of Europe. In Russia on the shores of the White Sea, it is between the parallels of 67° and 68° on the western side, and about 66° on the eastern side beyond Archangel. In Central Siberia it is between latitude 58° and 59°.'

"Now this territory which has been awarded to Ontario, and which it is proposed to include in the District of Nipissing, is situated between the 48th and 52nd parallels. At 69½ miles to a degree, the most northerly part of this district, therefore, is 9°, or 625½ miles south of the Shetland Islands, where fields of barley are, according to Mr. Stephens, 'seen growing;' it is 18° or 1,251 miles south of the limit of the growth of barley in Lapland; it is from 14° to 16°, or from 973 to 1,112 miles south of the same limit on the shores of the White Sea, Russia; and it is 6° 30′, or 451¾ miles, south of the latitude to which barley is cultivated even in *Central Siberia*. Of course, it is perfectly well known that the climate is much milder in Europe than in corresponding latitudes on this continent; but I am not aware that this holds good as regards Siberia; at all events, to the extent necessary to account for the extraordinary inferiority which the assumption that the limit of the growth barley is south of this territory, would indicate. On the contrary, I am persuaded that the presumption is entirely the other way, namely, that there is no part of this territory where, under a proper system of cultivation, barley may not be grown.

"There is another way in which the same conclusion is reached. Mr. Stephens, in the work just referred to, further says:—

"'A mean temperature of 46° 4′ during the summer seems to be, for our continent, the only indispensable condition for the cultivation of barley. In the islands of the Atlantic Ocean a summer temperature of three or four degrees higher appears to be necessary for its success. Iceland, indeed, where this grain cannot be cultivated, presents in its southern districts at Reikavik a mean temperature of 37° 4′ for the year—24° for the winter, and 49° 4′ for the summer. It appears that here considerable rains are the means of preventing the cultivation of cerealia. Thus the limit of barley in the countries where the cultivation is of the most importance varies between 46° 4′ and 49° of mean temperature during the summer.'

"Now the mean summer temperature at Moose Factory last year was 62° 3′, and even this year was about 57°, or nearly ten degrees higher than that which is sufficient to bring barley to maturity.

"In view of these facts, and of the evidence of Mr. Gladman and others on this point, it is my opinion that barley may be regarded as a fairly reliable crop in this territory.

"*Oats.*—No Scotchman, and few Canadians will under-rate the value and importance of the oat whether as food for men or horses. It is cultivated both in Europe and in Asia, in latitudes far north of this territory. That oats have been grown with more or less success at New Brunswick and Abittibi posts in the southern portion of the territory is satisfactorily proved. How far north of these posts a good crop can be depended upon, I have no means of ascertaining, but think it probable that the hardier descriptions of oat may be grown in three-fourths of this territory, at least.

"*Wheat.*—I was told that wheat had been successfully grown at the Hudson's Bay Company's post, on Lake Abittibi. Mr. Gladman stated in his evidence that 'he was informed that wheat had been tried with good success at Brunswick House.' Dr. Bell says that Mr. John McIntyre, now of Fort William, informed him 'that he found spring wheat to ripen well at Missinaibi.' Dr. Bell was also informed 'that some wheat which had got accidentally sown one year, was found to ripen, at Moose Factory. Mr. McIntyre told me, if I am not mistaken, that it was at 'New Brunswick' that he succeeded in growing wheat, and I rather think Dr. Bell unintentionally errs in saying it was at Missinaibi. Both posts, however, are in the territory, and not above sixty miles distant from each other. In order to grow wheat, a mean summer temperature of not less than 57° is said to be necessary. In Russia, Norway and Sweden, it would appear according to Mr. Stephens, that a mean summer temperature of from 59° to 61° is required for the growth of wheat. This does not exceed the temperature which will, in my opinion, be found to prevail in the southern and central portion of this territory. But whether wheat can be grown with sufficient certainty, to make it a desirable crop, can only be determined by experience.

"*Root Crops.*—With the exception of potatoes, and perhaps turnips, none of the roots have, I expect, been cultivated as field crops. Of potatoes, I have already spoken at length. Swedish turnips have been successfully grown at New Post, on the Abittibi River. In the gardens, carrots, turnips, beets and parsnips are planted, and I am told grow fairly in ordinary years. I noticed at Abittibi post, carrots going to seed, which had been left in the ground all winter, seemingly uninjured by the frost.

"*Other Vegetables.*—Cabbages, cauliflowers, peas, windsor beans, kidney beans, onions, radishes and lettuce are planted or sown in the garden at Moose Factory. They are sown and planted I presume in the expectation that they will come to maturity.

"Mr. Gladman says: 'that he raised potatoes and other vegetables in great abundance.' Dr. Bell says, 'that beans, peas, turnips, beets, carrots, cabbages, onions, tomatoes, etc., are grown without any more care than is required in other parts of Canada.' My experience will not warrant me in saying so much, but as stated before, this summer has been an exceptionally cold and wet summer at Moose. Most of the crops were therefore late, and below an average. The first green peas were brought to the table about the last week in August, and the crop was poor. Cauliflowers were ready to cut the first week in September, and were of good size and quality. Windsor beans of a rather small variety, were ready to use about the same time, and a very luxuriant and healthy crop. Kidney beans were a little later, but growing tolerably well. Turnips and cabbages had both failed, the former having been destroyed by the 'fly' and the latter by the cut-worm. Of onions (potato) and lettuce, the crops were very good. Many of the crops appear to suffer from being grown too long upon the same ground, thereby encouraging the multiplication and increase of their natural enemies, such as the cut-worm, turnip beetle or fly, carrot worm, etc. This is not the fault of either the soil or the climate, but of the cultivation. The Colorado potato-bug has not yet reached Moose Factory, or any of the posts, I believe, on Hudson's Bay. They were numerous, however, at the Hudson's Bay Company's post at Lake Temiscaming, and have reached, I was informed, the height of land.

"*Fruit.*—Currant bushes are exceedingly healthy and prolific at Moose Factory, particularly the red currant, the crop of which exceeded, I think, any that I have ever seen elsewhere. Both strawberries, raspberries and blue-berries are found growing wild

and the two former might, I have no doubt, be easily cultivated to any extent. Rhubarb thrives well, and is of excellent quality. I am not aware if any of our other common fruits have been grown, or attempted to be grown, at Moose Factory. I did not see any other than those mentioned. I have no doubt, however, that other varieties of fruit might be successfully cultivated.

"*Grasses.*—I did not observe any grassss sown or cultivated for fodder. At Abittibi, however, I saw abundance of white clover in the pastures, and found both white clover and timothy on many of the portages between Abittibi and Moose Factory, where the seed had been accidentally sown in the first instance. The timothy in some spots was nearly four feet in height, with large healthy looking heads. This is important as proving that this valuable fodder plant is adapted to the climate of this territory.

"*Flowers.*—I did not pay much attention to the flowers, but most of those found wild about Lake Nipissing appeared to grow along the rivers or in the woods in this territory—the wild rose in particular seemed to bloom everywhere. I observed the sweet-william, carnation pansy, and other flowers in the gardens.

"*Weeds.*—I met with a number of weeds that were familiar to me elsewhere, and which appeared to have become thoroughly acclimated at Abittibi Post and Moose Factory. Among them I may mention :—The nettle, thistle, burdock, hemlock, lambs-quarter and chick-weed. The healthy and vigorous growth of these weeds may be of some interest to the botanist, as indicating to him the fitness of the climate and soil for the production of more useful plants. If, without the active co-operation of man, and to some extent in spite of him, these weeds have become so thoroughly adapted to the climate and soil of this territory as to grow luxuriantly, mature their seed, withstand the frost and cold of winter, and reproduce their kind year after year in greater and greater profusion, it must surely be within our power, by a proper study of those laws of nature by which this has been accomplished, by an intelligent selection of suitable plants and seeds, and by skilful cultivation, to turn to good account every acre of arable land in this territory, and make it produce abundance of wholesome food for the comfortable subsistence of a large population.

"*Cattle.*—Horned cattle are kept at all the Hudson's Bay Company's principal trading posts, but more particularly at Moose Factory, Albany and East Main. At Moose they usually have a herd of from sixty to eighty head, besides sheep, horses and pigs, all of which appear to thrive admirably. At Albany, also, horned cattle do very well, but horses, it is said, do not live long there. This may be owing to some local cause, operating within a limited area, and capable of being obviated by a little skill and attention. Hay can be obtained in great abundance from the salt-marshes at the estuaries of the rivers. Owing to the tides, and consequent partial overflowing of the marshes, the grass cannot be dried on the spot. It is cut and brought in the green state to Moose Factory, a distance of not less than ten miles. There it is carried two or three hundred yards, and spread over fields which have either been in pasture, or the grass of which has been cut and made into hay, earlier in the season. This involves a great deal of labour, and with so much good land around Moose Factory, I think timothy grass could be grown on the spot, and with the improved implements now in use, made into hay, for much less than this marsh-hay costs. The hay obtained, however, from the salt-marshes must be very nutritive, for the cattle, and even horses, I am told, get nothing but this hay during the winter, and are kept in good order and condition. To parties having stock in the immediate vicinity of these marshes, they might be exceedingly valuable, furnishing as they would an unfailing and inexhaustible supply of grass and hay. I hardly entertain a doubt, that at some future, and probably not very remote period, vast numbers of cattle and horses will be reared in this territory, and form one of its most valuable and important resources. To the Province of Ontario, this territory may become immensely valuable, as furnishing 'a breeding ground' for horned cattle, which, when of sufficient age, may be driven or otherwise transported south, to be fattened in the older portions of the province, for the English market. Or with direct communication by steamer, *via* Hudson's Bay, and Hudson's Straits; they could be sent to England direct, and the process of fattening completed, on the rich pastures, of the mother country. That cattle raised in

the basin of the Hudson's Bay would be far more healthy and more thrifty, in England, than those of the western and south-western States, does not admit of a doubt in my mind; for the climate of this territory in the summer season, more closely resembles that of the north of England or Scotland than any other part of this continent I have ever lived in. When we consider the extent of this territory, equal to that of England and Wales the humidity of the summer season, the abundance of good water everywhere, the ample supply of timber for buildings, for fences, for fuel and for shelter, the luxuriant growth of the grasses, the healthiness of the climate both for man and beast, the perfect safety of life and property, and its proximity to England, the advantages possessed by this territory greatly overbalance, in my opinion, the one disadvantage of a winter a little longer but not more severe than the most favoured parts of our north-west territory. The land as seen along the rivers, although well timbered, will not be difficult to clear, and the natives speak of extensive plains in the interior, the value of which for pastural purposes, I have not yet been able to ascertain.*

EXTRACTS FROM REPORT FOR 1882.

"Again in my report for 1882-83 further information is given on this subject, and although some of the views and opinions then held and expressed may be rather too sanguine, they are on the whole approximately correct, and may for the reasons just given be repeated here.

Under this head, on page 13 *et seq*, the following occurs:—"It is only at the fur trading posts of the Honourable Hudson's Bay Company that any attempt has been made to cultivate the soil. A few of the Indians on the Mattagami River, who trade at Matawagamingue Post, are now trying to grow potatoes, and I trust that they may so far succeed as to induce others to follow their example.

The officers of the company know very little about farming as a general rule. Their lives from the time they were little more than boys, have been spent in the country and devoted to the fur trade. The consequence is that the farming at the inland posts is of a rather primitive and unscientific description, and confined chiefly to the growth of the potato as a field crop. At the larger posts on the coast, particularly Moose Factory where a number of old countrymen are employed, they understand how to grow the potato, and cultivate it well and successfully. But even at Moose very little attention is paid to drainage, and none whatever to the importance of a judicious course, or rotation of crops. The wonder to me is that the land so treated continues to yield any crop at all.

Where the agricultural operations have been so very limited, all that can be said on the subject of the crops that have been grown in the territory has been given in former reports. Having now, however, visited every post but two in the territory, and traversed it in various directions, it may be expected that I should give the general conclusions at which I have arrived on a subject of so much consequence. This I shall do, even if it be necessary to support my opinions by an appeal to some facts which have been already recorded in former reports. Commencing with the cereals, we will take that first which is usually regarded as of the greatest importance and value:—

"*Wheat.*—I am strongly of the opinion that wheat may be successfully grown where the soil is suitable in all that part of this territory lying to the south of the fiftieth parallel of latitude. This opinion is founded on the belief that there is no other part of the world south of that latitude where this grain has not or can not be grown; that the mean temperature of the summer in the territory south of that parallel is amply sufficient to ripen or bring wheat to maturity; and finally, that there are good grounds for believing that wheat has actually been grown at Abittibi House, Flying post, New Brunswick, on or about the forty-nineth parallel, and certainly at Lac Scul, or Lonely lake, between the fiftieth and fifty-first parallel. More than this: I was told on the very best authority

* This expectation was disappointed—my exploration in 1880, and subsequently—showing that the arable land seen on the river banks does not extend far inland, but that the coast belt here referred to, is mostly covered by muskegs or peat mosses. E.B.B

that Indian corn, a more delicate plant than wheat, came to maturity last year at Osnaburgh House, on Lake St. Joseph, and north of the fifty-first parallel. Even at Moose factory, in about the same latitude as Osnaburgh and situated on the coast, Dr. Bell tells us that he was informed that a few grains of wheat accidentally dropped, grew and came to maturity. There is hardly any evidence on the other side, certainly none entitled to much weight, and the probabilities are all in favor of the assumption that within the limits stated wheat may be successfully cultivated.

"*Barley.*—The hardier varieties of this grain can be grown further north than any other of the so called cereals. In Scotland it grows on the Orkney Islands and in Shetland as far north as the sixty-first parallel. In western Lapland the limit is about the seventieth parallel. In Russia it is cultivated on the shores of the White Sea, everywhere south of sixty-six degrees on the eastern side, and of sixty-seven degrees on the western side. In central Siberia the northern limit of the growth of barley is between latitudes fifty-eight and fifty-nine. These facts are quoted on the authority of Mr. H. Stephens, F.R.S., author of "The Book of the Farm," "The Farmer's Guide," and other standard works on agriculture, both in England and America. Mr. Stephens further states "that a mean temperature during the summer of 46° 4' seems to be all that is necessary in Europe for the cultivation of barley, but that in the islands of the Atlantic a temperature three or four degrees higher appears to be necessary for its success.

"The territory awarded to our Province north of the Height of Land is situated between the forty-eighth and fifty-second parallels of latitude, or from four hundred to seven hundred miles south of where barley is cultivated even in Siberia. Again, the mean summer temperature at Moose Factory, in the extreme northern part of the territory, varies from fifty-eight to sixty-two degrees, and is probably higher in the central and southern portions. This is at all events ten degrees higher than the temperature, which according to Mr. Stephens, "*is the only indispensable condition for the cultivation of barley.*" I have seen barley growing at Rupert's House and at Moose Factory on the coast, and at Flying Post and Matawagamingue in the southern part of the territory. I have been told on what I consider good authority, that it has also been grown at New Post, at Abittibi House, at New Brunswick, and at Long Lake House. Thus the evidence is conclusive not only as to the perfect adaptation of the climate, but to the fact that this grain has been actually cultivated in the northern, central and southern divisions of the territory. All that even the most incredulous can contend for, is that the crop is poor or that it sometimes fails to ripen perfectly. Now as regards the latter statement, I have no doubt that in the extreme northern part of the territory, bordering on the coast, it may fail in exceptionally wet and cold summers to come to perfect maturity. But this will not apply to the vast territory to the south, where barley will prove, in my opinion, a good and perfectly reliable crop. Nor do I think it would fail to ripen at Moose Factory or even Albany, if sufficient attention were paid to the drainage of the land, to the selection of the seed, to the time of sowing, and to a proper course or rotation of crops. If the crop be poor (and it is by no means always so) it is in all probability owing to poor farming rather than anything that is wanting either in the soil or the climate.

"*Oats.*—This useful grain should grow wherever wheat will grow. Indeed its growth is practicable in Scotland, Ireland and other countries where wheat will not succeed. My own belief is, that the hardier varieties of the oat may certainly be cultivated in the greater part of the territory. I have not seen it growing, however, at any of the posts I have visited. I have been told that oats have been sowed at Abittibi House, at New Brunswick, and even at Moose Factory, and came to maturity; but other parties again said that the crop frequently proved a failure. This, however, may have arisen from the causes alluded to under the head of "barley."

"*Rye.*—In Germany, Austria and Hungary, and other countries, rye is extensively grown, and forms the principal bread-stuff of a very large proportion of the population. Its cultivation does not extend, it is said, so far north as that of barley, but it grows in regions too cold for wheat, and on soils too poor and sandy for any other grain. Its ripening, in the opinion of some writers, can also be more confidently reckoned upon in cold

regions, than that of any other grain. I have neither seen rye growing, nor have I ever heard of any attempt to grow it in this territory. I am convinced, however, that at Matawagamingue in the southern part of this territory, and in the sandy areas on both sides the Height of Land, this important grain can and will be cultivated with very great advantage.

"*Peas and Beans.*—These, which are called legumenes or leguminous plants, produce seeds much richer in nitrogen or flesh-forming material, than the grains—wheat, oats, barley, maize, rye, etc., called cereals. They form an aliment of great value, and are extensively grown in many parts of the world, where they are used as food by man and domestic animals.

"The Windsor bean and Kidney-bean are generally relished when young and green. A small variety of bean commonly known as the "Horse bean" is extensively cultivated in Great Britain, where it is highly valued in combination with oats as a provender for horses. The kidney-bean when fully ripe, is a wholesome and very nutritive aliment, highly esteemed in this country and elsewhere, especially by the working classes, and commonly known under the name of haricot or white beans. I have not seen either peas or beans cultivated as field crops in any part of the territory. They are common, however, in the gardens even on the coast. At Moose Factory peas, kidney-beans and a small variety of the broad or Windsor bean seem to be unfailing crops. They grow well and I have no doubt in ordinary seasons will ripen their seed. They are used, however, chiefly, if not entirely, in the green state.

"The beans appear to succeed better and to be more prolific than the peas, which are not always so good. I have been surprised at the invariable excellence of the crops of both kinds of beans at Moose Factory. Nor have I ever seen a better crop of Dwarf-kidney beans than was growing at Matawagamingue when I was there last August (20th). The bean was of a brown colour, and a little larger than the white haricot. Mr. Rae told me that they came to maturity and were quite equal to the white bean.

"The vetch, a variety of the pea family, grows wild everywhere, but nowhere is it anything like so abundant as on the coast of James' Bay. So plentiful are they on the more sandy parts of the old beaches that I have sometimes thought that the Indians would do well to harvest a lot of them for use, at a pinch during the winter. With a little judicious selection and cultivation this vetch might become of great service in a country, to the climate and soil of which it is so thoroughly adapted.

"*Potato.*—There is probably no food plant that is likely to be of more importance to the inhabitants, present or future, of this territory, than the potato. There is none the cultivation of which has been so thoroughly successful in every part. The admirable fitness both of soil and climate for its growth has been established beyond dispute. No one who has seen the crops at Moose Factory, Rupert's House, New Post and Matawagamingue, can entertain any doubt on this point. Whether viewed in reference to size, quantity or quality, the crops at Moose Factory, and Matawagamingue this year would compare favorably with those in the best potato growing districts in Ontario. They keep all winter in common root-houses, and are sweet and good until the following crop is fit for use. Peaty soil is particularly well suited to the growth of potatoes. As stated elsewhere, there are millions of acres of peat-mosses in this territory, very extensive areas of which can be easily reclaimed, and when this country is settled and means of transport provided, it is within the range of possibility, if not probable, that hundreds of thousands of tons of potatoes may be grown and sent south to supply the wants of the people in the cities of Ontario and the northern states of the Union.

"*Other Roots.*—If in the near or more remote future, the breeding of cattle and dairy husbandry be likely to form important resources of this territory, as is by no means improbable, then the fitness of the soil and climate for the growth of root crops is of the greatest consequence. Among these the turnip is entitled to a place in the front rank. I have seen small patches of turnips, usually Swedish, at most of the Company's posts in the territory and believe that on suitable soils, proper culture would ensure large crops of excellent bulbs. The carrot, beet and parsnip can also be grown, but like the turnip have only hitherto been cultivated as garden crops. I know no reason why they should not one and all succeed in the field also.

"*Green Vegetables.*—Cabbage, spinach, lettuce, mustard, cress and radishes are grown without any difficulty. The cauliflower, so tender, as I thought, in respect of frost, appears to be one of the surest crops at Moose Factory, and is sometimes ready for the table as early as the first of August. Potato-onions also grow well, but the season is too short to grow onions of any size from the seed. The cut-worm is the great enemy of the gardener at Moose Factory, as it is in many other parts of Canada, and if the cabbage and cauliflower plants were not well looked after and protected, few would be left.

"*Fruit.*—The only fruit that appears to be cultivated in the garden are the red and black current and the raspberry. The red current is remarkably prolific. Rhubarb also grows well. Other small fruit, such as the strawberry and gooseberry might, I am persuaded, be raised with little trouble, for they are found growing wild in many places, and perhaps nowhere more plentiful, or of finer quality than on the coast. With these we have the wild raspberry, a diminutive variety of blackberry, which grows only a single berry on each plant, and a very small kind of cranberry. The huckle-berry or blue-berry is found in great profusion from the long-portages to the Height of Land. Indeed it may be said to abound from the coast of Hudson's Bay to the shores of Lake Huron and Superior. It was nowhere in greater profusion or of finer quality than on the Height of Land itself. The berries gathered from one measured square yard as an experiment filled a large pint cup, * At the same rate, an acre would produce two thousand four hundred quarts of this wholesome fruit. Even allowing that the berries were exceptionally plentiful on the spot in question, it is not the less true that could the quantity of fruit which grows in the country lying between Lakes Huron and Superior and the fiftieth parallel be approximately estimated it would appear simply incredible to those who have not seen the country during the berry season. It would dwarf into comparative insignificance, in my opinion, all the other fruits put together. Without any rich or strong flavour, it is a pleasant, refreshing and exceedingly wholesome fruit and may, I think, be eaten in almost any quantity without danger. The natives are very fond of them, and even gather and dry the berries for use after the season is over. But all that man can use is as a drop in the bucket; the almost unreduced bulk of the fruit forms a bountiful provision of Nature for her other creatures. To the beasts of the field and the fowls of the air, and every creeping thing, these millions of bushels of fruit thus left over are as food; to some, perhaps only an agreeable luxury, to all doubtless a source of delight of which we can form no adequate conception. To none of all these, perhaps, it is a greater blessing than to the ant, that diligent and brave little pioneer who precedes man and earth-worms alike by centuries, in the important work of ameliorating and preparing the crude soil for the support of higher orders of vegetable and animal life. That an omniverous animal like the bear should eat, or even subsist for a time on these berries seems quite natural, but when we find among its consumers carniverous animals such as the fox, the marten and the fisher, and such birds as ravens, woodpeckers and ducks, one cannot help feeling more or less surprised.

"The only other wild fruit that I shall notice is also a variety of Whortleberry. This is a bush or tree not very unlike the wild cherry in appearance. North of the Height of Land it attains a height in some placee of ten or twelve feet, but is generally about six feet. The fruit grows singly, not in bunches or clusters on the tree. It is of an oblong or pear shape, larger than the blue-berry, but smaller than the grape. When ripe it is of a purple or blue colour. It is sweeter and has more flavour than the huckleberry, and is preferred by the natives to it. It too is found all the way from James' Bay to Lake Huron, but nowhere did I see it in greater perfection than on the Mattagami River. The fruit is not only pleasant and wholesome, but the juice would, I am pursuaded, make an excellent wine, and the tree is worthy of cultivation and of a place in our orchards or gardens.

"The high-bush Cranberry and the Hazlenut are also met with in many parts of this territory, but in travelling south I did not observe any nut trees until I came to Little Long Portage on the Mattagami River, nearly a hundred miles from James' Bay.

* This profusion of blue-berries does not extend to all this territory, but is limited to the rocky and sandy districts. E.B.B.

"So soon as the Canadian Pacific Railway is extended through this territory, the gathering of these wild fruits will afford the natives a lucrative employment, as it does now to many of those on the north shore of the Georgian Bay. Nor to the great mass of the inhabitants of our cities will an overflowing abundance of such wholesome fruits as this territory affords in unlimited quantities, be otherwise than agreeable, the dearness of those cultivated fruits which can be exported to foreign countries placing them to a great extent out of the reach of the families of workmen.

"Nor is there anything unreasonable in the supposition that a country possessed of a climate which enables the uncultivated soil to produce spontaneously such a variety and abundance of wild fruits, may be capable of doing a great deal more with man's powerful aid and assistance.

"No attempt has been made yet, so far as I know, anywhere in this territory, to grow apples, plums, or cherries. I am inclined to think, however, that these and other highly prized fruits might succeed in the southern, higher, and drier parts of the territory. I should be much more hopeful of their doing so than on the north shore of Lake Superior.

"On the south side of the Height of Land, and coming down in some places to within a few miles of Lake Huron, the country like that for a considerable distance north is full of lakes. These are not generally very deep, one result of which is that the water heated by the sun's rays becomes much warmer throughout than the water of lakes Huron and Superior. I found the temperature of the water of Lake Monabing at the surface 70° Fah., and at fifty feet in depth it was still not less than 62°. I am of opinion, therefore, that orchards planted on islands or on the warm, dry ridges of bouldry or gravely soil, lying between such lakes or even to the south of them, would not be likely to suffer from summer frosts, the chief, if not the only obstacle to the growth of many valuable fruits. I saw on Whitefish Lake, Indian corn planted in just such a locality as that I refer to, and this circumstance, which I have noticed elsewhere, goes far to convince me that the climate of a wide belt of territory on both sides the Height of Land, between Lake Huron and James' Bay, is so tempered and modified by the warm waters of the numerous small and shallow lakes, which cover probably one-third of the country, as to admit of the cultivation of many of our most valuable kinds of fruit.

"*Grasses.*—Whatever doubt may remain in the minds of any as to the agricultural value of the country north of the Height of Land in respect of its grain-growing capabilities, there can be none in regard to its fitness to produce the more important roots and grasses. From the height of land northward to the coast of James' Bay nothing on the north Shore of Lake Huron or Superior can exceed the luxuriance of the native grasses. These, however, are limited to beaver meadows, alluvial lands along the banks of the rivers, marshes in vicinity of the lakes, and to a broad belt on the southern coast of James' Bay; where covered with forest, bush or peat mosses, little grass is to be seen.

"I have not met with a field of cultivated grass in the whole territory. At those posts of the Hudson Bay Company where cattle are kept, they obtain their hay either from the marshes bordering upon the inland lakes or from the salt marshes on the coast. Some however, of our cultivated grass-seeds have been sown in former times at several of the posts, possibly with the view, rather to improve the pasture, than for hay. Be this as it may, white clover is to be seen at almost all the posts, and red clover, sown some fifteen years ago at least, is still common in the fields at Flying Post. Timothy likewise grows admirably in this territory, being quite able, like the red clover, not only to endure the cold of the winter, but to mature its seed, as is proved by its being still found on portages where the first seeds were accidentally dropped many years ago. These facts though meagre, are important, enabling us, as they do, to form at least some idea of the fitness of this territory for pastoral pursuits.

"*Cattle.*—With one doubtful exception not only man, but all the domestic animals usually kept by him enjoy excellent health in this territory. The only exception is the horse, and the only place Albany Factory. Several horses having died unaccountably at this post, the Company have not made any further attempt to keep them there. The cause, whatever it may be, can hardly be the climate, as that differs but little from Moose Factory, where the horses are remarkably healthy.

"Cows and oxen are kept at all the principal posts, and I have invariably found them wherever I have been, healthy and in fine condition, pretty good evidence of the salubrity of the climate and excellence of the pasture. At Moose Factory, where some sixty head at least are constantly kept, a certain number are slaughtered every fall, and are quite fat although then taken straight from the grass. The cows yield a large quantity of good milk.

"*Sheep.*—There is a small flock of sheep also at Moose Factory. They appear to be of a common and not very large breed. It is necessary to house them at night and watch them during the day, to protect them from dogs, of which numbers are kept by the Indians. They seem to thrive pretty well notwithstanding, and are, so far is I know, subject to no particular disease.

"*Hogs.*—A few pigs, seemingly well-bred, are kept. They are allowed during the summer to run at large on an island opposite the Post, and what they can gather for themselves is supplemented with potatoes and waste from the kitchens. They are thus maintained in good health and growing condition, but cannot be fed up fit to kill without grain or meal in the fall, which is, I presume, given to them, for the home-cured hams are exceedingly fine.

"*Poultry.*—It is impossible to keep poultry at or near any of the fur-trading posts unless they are enclosed in a well-fenced yard. The Indian dogs, unbroken and half-starved, would worry and devour any fowls that were suffered to run at large. But for this the common barn-door fowl might be reared and kept with great advantage. The turkey would do well also with full liberty to range about during summer.

"The vast numbers of wild-fowl which migrate to and spend the summer months in this territory affords sufficient proof of its fitness for geese and ducks, both of which might no doubt be easily bred and reared.

"In conclusion under this head, the agricultural resources of this territory are, as will now have been seen, various and by no means unimportant. The climate has been shown to be such :—

"That we have good reason to believe wheat, oats, barley, and rye, as also peas and beans can be successfully cultivated.

"That excellent crops of potatoes and turnips can be grown in any part of the territory, and that other roots such as the carrot, beet and parsnip will in all probability succeed.

'The cauliflower, cabbage, and all the common vegetables raised in the northern part of Ontario can be likewise grown at Moose Factory and at other posts south thereof.

"That the cultivated grasses, red clover and timothy, grow luxuriantly, mature their seed and survive the winter.

"That wild fruits of various kinds, and valuable of themselves, are spontaneously produced in great quantities, warranting the inference that cultivated varieties may be successfully and profitably grown in the territory.

"That live stock, horses, cows, sheep, pigs and poultry thrive remarkably well in every part of the territory where introduced, with the exception of Albany Factory, at which the horses alone for some unknown reason have not lived.

"The soil, as might be expected in a territory so large, is variable, ranging from clay loams at or near the cost, to light, sandy or gravely loams towards the Height of Land, and in some sections very extensive peat-mosses. These peat-mosses are confined chiefly to the territory lying to the north of the forty-ninth parallel. The southern limit, however, of the peat-moss region, is I believe very considerably north of the forty-ninth, if not even of the fiftieth parallel, west of the Missinaibi Branch of Moose River. These peat-mosses repose on clay marls, and although not immediately available for cultivation, I have hardly a doubt vast tracts will be eventually reclaimed and converted into good arable land.

"Along the banks of the rivers, even in this northern belt, there is a strip of good land. The islands and river bottoms have a rich alluvial soil. Above the junction of the Mattagami and Ahkuckootish Rivers this alluvial or bottom land is still more extensive than below the Long Portage, and much of it that is probably flooded for a week or two in the early spring might be turned to very good account as meadows or otherwise, there being no danger whatever of flooding after the subsidence of the spring freshet, caused by the melting of the snow. As we approach the Height of Land and the country becomes more broken, the dry ridges will afford fine pasture, while portions of the lower slopes where not too stony, and the river bottoms may be cultivated. The swamps, if drained, would frequently make excellent land, and the marshes will always be more or less valuable for grass and hay."

Experimental Farms.

The following, which is taken from my report for 1884, pp. 24 and 25, is of such importance, in my humble opinion, as to justify me in again bringing the subject to which it refers under the notice of the Government.

"In all the reports which I have had the honour to submit in reference to this territory, I have expressed the opinion, that, while the climate in by far the greater portion of it, will admit of the growth of all the more important roots and grain crops, the soil and other conditions are better suited to the breeding of store cattle, and to dairy husbandry. See report for 1879-80, page 20-25, and report for 1882-83, pp. 13, *et seq.*

"To engage successfully in these latter branches of farming it is not imperatively necessary that colonization or other roads should be made to each man's door. Store cattle can be driven many miles over a country, which, if not already passable, can be rendered so with very little labour. The expense of driving cattle sixty or seventy miles to the nearest railway station or steamboat landing is trifling; nor would the transport of really good butter a like distance, over winter roads, be a very serious obstacle to the success of dairy farming if the country and the climate were otherwise favourable. It is a very different matter when the marketable produce of a country is grain or roots, even if that grain be wheat. Of this we have already sufficient evidence in the experience of settlers in the west and northwest.

"If a portion of the money heretofore spent in promoting emigration were expended in placing beyond doubt the fitness of our northern territory for the growth of grain and root crops, and its particular adaptability for the raising of cattle and the making of cheese and butter, such an expenditure could not, in my opinion, fail to be, in the highest degree, beneficial.

"With this object in view, I would respectfully suggest the establishment, at suitable points, of experimental farms, in this territory.

"The object sought to be obtained is not of the nature of "model farming," nor is it the raising of large crops. That which we really want to find out is, what kind of crops can be raised in different parts of this territory? And further, in regard to those crops that will grow, which are best adapted to the soil and climate? or in other words, the most thrifty and productive. It is of vital importance, as bearing on the value of this territory and the manner in which it should be opened up and developed, that the Government should know from actual experiment whether wheat, barley, oats, rye, peas, beans, vetches, etc., will grow and come to maturity. As regards wheat again, whether fall wheat is or is not a reliable crop in a territory like this, where the ground is covered with a mantle of snow the entire winter? That potatoes will grow well from the Height of Land to the very coast of James' Bay, has been sufficiently proved at the Hudson Bay Company's Posts. But there are other roots of no little importance, such as the carrot, turnip, beet, parsnip, in respect of which it would be desirable to have further information. Again, as bearing on the suitability and value of the country for stock-raising, and for dairy farming, it would certainly be well to know, from actual experiment, what grasses will grow in the territory, such as red and white clover, timothy, rye grass, etc., including

not only those valuable for fodder, but for pasture also. It would be interesting also to know whether the cultivation of flax, hemp, and hops might be expected to be successful. And some of the smaller fruits even might be worthy of notice.

"All this, it appears to me, might be ascertained by carefully conducted experiments on ten acres of land or less, and in a period of four or five years at the most. The results might not be quite as satisfactory or reliable as those obtained by farming in the large way, but would nevertheless, I think, be exceedingly valuable to the Government and people of this province.

"The Government would then have not merely opinions and reports, but reliable facts on which to base its policy in regard to the opening up and development of the territory. It would then know what kind or class of settlers would be almost, if not quite certain, to make a fair living and comfortable homes in the territory, and these and no other should be encouraged to go there. The success and contentment of the first pioneers is the best advertisement of, and the surest way to people this or any other territory.

"It may be feared that these "experimental farms" will be too costly, but most of the operations would, in reality, more nearly resemble those of the market gardener than of the farmer. No expensive buildings need be erected, and those absolutely required might be constructed of logs, which can be procured on the spot. I believe these farms, if judiciously located and properly handled, would be self-sustaining after the second year, and that no part of the capital invested need be lost. And further, that under any circumstances the expense will be altogether trifling as compared with the importance and value of the results.

MINERAL RESOURCES.

In this northern portion of Ontario, the fundamental rock is so generally concealed from view by the overlying drift, that it does not, for that reason, afford a very promising field for the explorer in search of those metallic ores, or other minerals commonly found in veins. In the banks of the rivers and on the shores of the lakes and islands the rock is occasionally exposed, having been denuded by the action of the water. But in the rivers such exposures are chiefly met with at rapids and falls. In the intervening stretches although there may be a great deal of loose rock and many boulders and an occasional reef, very little rock is met with in situ. On the lakes again, it is principally on exposed points and islands that rock is found, rarely in bays, and even when met with in such positions, whether on lake or river, the bare rock will not often be found to extend far inland.

Nor is the rock itself, either on the height of land plateau, or central belt or plateau, generally of the kind most likely to contain rich veins of the more useful metals, the fundamental rock being generally Laurentian. There are, however, important areas where it is Huronian, and it is these more especially which should claim the attention of the prospector. Ores of iron, copper and lead have already been found in several localities, in promising, if not paying quantity. Iron pyrites, mica and other minerals of more or less economic importance have been met with, and it is quite within the range of *possibility*, if not *probability*, that as the country is rendered accessible, systematic exploration may be rewarded by the discovery of the precious metals.

In the northern division or coast belt of this territory, the fundamental rocks are stratified or flat-lying. They belong to the great palæozoic division of the geologists, and consist of limestones, sandstones and shales, differing greatly from each other in appearance and composition, and when fossiliferous, as many of these beds are, each group is characterised by the presence of particular fossils absent in other groups.

For an explanation of the terms usually employed by geologists, and for a description of the rocks in this part of the Province, I must refer to the excellent little work of Dr.

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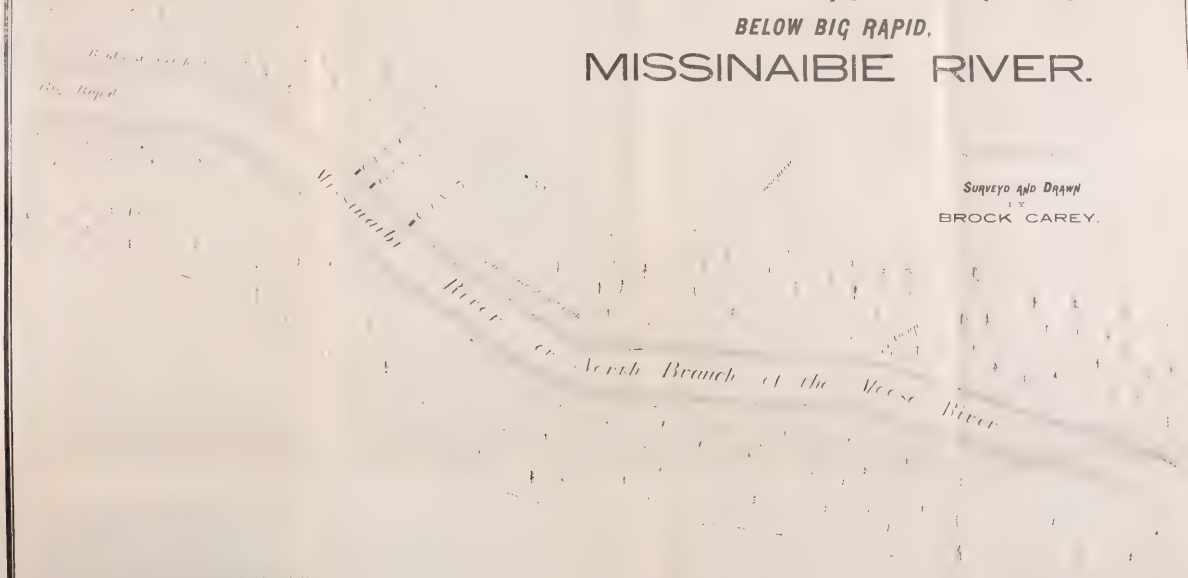
PLAN OF LIGNITE POINT

BELOW BIG RAPID,

MISSINAIBIE RIVER.



SURVEYD AND DRAWN
BY
BROCK CAREY.

NOTE Big Rapid is supposed to be about half way between the Long Portage and Moose Factory

Bell of the Geological survey of Canada, entitled "The Geology of Ontario with special reference to Economic Minerals," recently published, as supplying, in a popular and concise form, information which cannot fail to be useful to intelligent explorers and miners, as well as to others interested in the mineral resources of the Province.

This plain or coast belt is completely covered to a greater or less depth with the loose material called drift; deposited for the most part, as has already been explained, by ice. On or near the coast of James Bay, the drift or other loose material rarely, I think, exceeds forty feet in thickness. It gradually increases, however, as we recede from the coast, and is as much as two hundred feet in some places at or near the southern edge of the belt, and rarely less than one hundred feet in depth. From this it may be inferred that the underlying flat rocks are very seldom to be seen. So true is this, that I am satisfied I am within the mark when I say that not one-quarter of a per cent., or one four-hundredth part of this belt is bare rock.

In no place where these palæozoic strata have been laid bare, have I ever seen a well defined vein of any kind, metalliferous or otherwise.

Nevertheless I consider the southern edge or belt of this palæozoic plain as, by far, the most valuable part of this territory, in regard of its mineral resources.

They consist, so far as discovered, of lignite or brown coal, iron ore, kaolin or china clay, potters' clay, the finest of sand for glass-making, gypsum, fire-clay and brown and yellow ochres, nor are there wanting, indications at least, of both petroleum and gas.

I shall endeavor to describe these minerals in detail, each under its separate head, and will first quote from my report for the year 1879, as follows:—"Two-thirds of the country passed through on my journey to and from Moose Factory consists of Laurentian and Huronian rocks, the former greatly predominating. So far as my experience goes, they have produced few mines of the more useful metals that have proved rich and productive for any considerable length of time. On Lake Temiscaming (east or Quebec side) a location was pointed out to me where galena or lead ore had been found, and which presented a rather showy appearance. I found quite a large vein of magnetic iron ore on the Rocky Portage, one of the uppermost of fifteen portages, which occur in a distance of not more than ten miles after leaving Lake Temiscaming. The ore, however, did not seem to be rich. This also is on the Quebec side of the boundary. Descending the Abittibi River, the rock is not often visible, excepting at the rapids and on the portages, and neither at these places, nor on the shores of Lake Abittibi, did I observe any minerals or metallic ores of much value or importance.

Gypsum.

Returning from Moose Factory, a fine bed of gypsum, known to the natives as the "White Rocks," is seen in the banks of the main Moose River, about thirty-five miles above Moose Factory. This bed of gypsum was carefully examined by Dr. Bell, of the Geological Survey of Canada, in 1875, and is described by him in the Report of Progress for that year as follows:—"Leaving the Grand Rapids (Dr. Bell was going to Moose Factory *via* the Matagami or South Moose), no rock *in situ* was observed until arriving at the White or Gypsum Banks on the main Moose River. They occur on both sides of the river, and begin at thirty-eight miles above Moose Factory. The bank on the south-east side runs for about two miles; that on the opposite side about half that distance. The gypsum consists of a bed of the ordinary hydrous saccharoidal variety, running along each side of the river, and raising to a height of not more than ten feet above low water mark. It is mostly of a light bluish-grey color, with some whitish portions colored or mottled with yellow and other colors. The white variety, suitable for making stucco, was not observed in sufficient quantity to be of economic value. This bed is overlaid, on both sides of the river, by a layer of mixed gypsum and bluish-drab marl, also about ten feet thick. The gypsum is in the form of lumps, many of which consist of transparent, colourless selenite cleaving into thin lamina. A gypsum

bank, similar to the last, runs along the south-east side of the river, between four and five miles below the extremity of the higher one on the same side." This bed of gypsum can be easily and cheaply worked, and it will no doubt become valuable as a fertilizer and for other purposes when the country is opened up and settled.

Lignite.

On the north branch of the Moose River, sometimes called the Missinaibi River, and about one hundred miles from Moose Factory, we came to Coal Brook or creek, where the existence of brown coal or lignite would appear to have been long known to the Hudson's Bay Company's officers and servants. I found a tolerably good specimen on the sand bed at the junction of the brook and main river. I did not see the lignite *in situ*, being unable to ascend the brook in search of it. A day or two before arriving at that point, the weather had become very cold and frosty, and as the voyageurs who accompanied me had to return to Moose Factory after taking me to Michipicoten, they were very anxious to push on with all speed, fearful that the smaller lakes on the height of land might freeze before their return and thus expose them to a great deal of hardship, if not danger. This circumstance prevented my giving as much time and attention, not only to the minerals, but to other resources, as I should, under other circumstances, have gladly bestowed on them. Dr. Bell, however, who examined this and other beds of lignite in 1877, thus describes them in the geological report for that year, p. 4C. "The existence of lignite on the Missinaibi (North Moose) River, was referred to in my report for 1875, page 326. During the past season I found it *in situ* in several places on this river, between the Long Portage and its junction with the Mattagami. The first or highest of these was in the west bank of Coal Brook, three-quarters of a mile from its mouth, Coal Brook is a small discharge or channel which leaves the main river opposite the head of the fourth or River-side Portage, and rejoins it five and a half miles below Round Bay at the foot of Hell Gates. This bed of lignite is about three feet thick, and is underlaid by soft sticky blue clay and overlaid by about seventy feet of drift clay or till, full of small pebbles and passing into gravel towards the top. Much of the lignite retains a distinct woody nature, some of the imbedded trunks are two feet in diameter. When dry, it makes a good fuel, but contains a little iron pyrites. On the south-east side of the river, at nineteen miles below Coal Brook, or two miles above Woodpecker Island, a horizontal seam of lignite was found in a bank of 'till' 125 feet high. It is from 1½ to 2½ feet thick, and is made up principally of sticks and rushes. Below the lignite are 80 feet of yellow-weathering grey clay, and above it 45 feet of blue clay. Both varieties of clay are full of pebbles, and they also hold some striated boulders of Laurentian gneiss, Huronian schist, and unaltered Devonian limestone. At three miles below Woodpecker Island, or nine miles above the mouth of Opazatika (Poplar) River, another bed of lignite occurs in the bank upon the same side. It is 6 feet thick, but diminishes to the eastward, and is of a shaly character, being made up of laminæ of moss and sticks. Immediately below the lignite is a layer 1 foot thick, of irregularly mingled clay and spots of impure lignite. Next below this are 40 feet of unstratified dritt, full of small pebbles, under which are a few feet of stratified yellowish sand and gravel. Resting upon the lignite are 5 feet of hard lead colored clay with seams and spots of a yellow color, and layers of red grey, drab and buff. Above all and forming the top of the bank, 65 feet high, are 10 feet of hard drab clay with striated pebbles, and small boulders holding rather large valves of *Saxicava rugosa*, *Macoma calcarea* (*Tellina proxima*), and *Mya truncata*. Small seams of lignite were seen in two places in the bank on the same side at, and again half a mile below the foot of a rapid which occurs about six miles above the Opazatika. In the interval, between one and two miles above this stream, the whole bed of the river appears to be underlaid by lignite. When sounded with a heavy pole it has an elastic feel, and gives off large volumes of gas, which may also be seen at any time bubbling up spontaneously here and there all along this part of the river. This phenomenon has been observed by the Indians from time immemorial, and the locality has received the name of the 'Bubbling Water.' A box of specimens of the lignites of the above localities was brought to Montreal for examination."

"No analysis of the specimes of lignite collected by Dr. Bell in 1877, has yet been made, so far as I know. A specimen, however, obtained from the Moose River by Dr. Bell, in 1875, was examined by Mr. Hoffman, and gave the following results (Geological Report, 1875-76, page 422):—

	Slow Coking.	Fast Coking.
Fixed carbon	45.82	44.03
Volatile combustible matter	39.60	41.39
Water	11.74	11.74
Ash	2.84	2.84
	100.00	100.00
Ratio of volatile to fixed combustible	1:1.16	1:1.06

This specimen of lignite was thoroughly air-dried. Mr. Hoffman observes in reference to it:—"This lignite is very similar in composition to those from the Souris Valley, collected and examined by Mr. G. M. Dawson, as also to those from the Dirt Hills and Woody Mountains (North-west Territory), collected by Mr. Bell."

Although looked at hurriedly in passing, I had never had it in my power at all carefully to examine these lignite beds until last year. In addition to the places on the Missinaibi, described by Dr. Bell, I had in the course of my own explorations found lignite "in situ," both on the Mattagami and Abittibi branches of Moose river.

But having neither tools nor men, or indeed permission to use them, in the work of opening up and testing these or other mineral deposits, nothing more was done than simply to report the existence and apparent size of the beds. Nor would it have been prudent to do more until the boundaries of the province were finally determined.

Last summer however, by the desire of the Honorable the Commissioner of Crown Lands, I took with me, when going to Moose factory, such tools and men as would, I expected, enable me to examine these beds of lignite more thoroughly, and to form a more decided opinion as to their economic value and importance.

Owing to unavoidable delays arising from circumstances which could not be foreseen, but more particularly to sickness among the Indians at Missinaibi, and the difficulty—amounting almost to impossibility—of obtaining voyageurs or guides, either there or at Moose factory, much valuable time was lost. The results obtained however if not entirely satisfactory, are to say the least encouraging.

Seeing that it would be impossible during one short season to test or even examine carefully the lignite-beds on all the rivers mentioned, I determined to restrict our operations to those on the Missinaibi branch of the Moose River. We accordingly proceeded straight to Moose Factory where it was necessary to get some tools made and to procure more men, both of which were indispensable. This done we commenced to re-ascend the river on the 15th of July with the intention of examining the several out-crops of the beds of lignite as we came to them, beginning with the lowest at Big Rapids, about half way between Moose Factory and the Long Portage, and ending at Coal Brook, some eight miles below Long Portage. The distance between these two points, by the river, is nearly 60 miles. Judging from what I had previously seen, I expected to find the lignite at Coal Brook in greater quantities, if not of better quality, than at any other place on the river.

On the 18th of July we reached Big Rapids. The lignite at this point was discovered by one of my voyageurs in 1880 and was thus referred to in the report for that year, p. 12. "Emichoo, my bowsman, brought me a piece of lignite which he had found in the bank of the river a short distance above our camp, and about midway up the rapids. I went to examine the place and found it was seemingly a regular bed situated about 18 feet below the top of the bank and between 2 and 3 feet in thickness. It was traceable a little above the edge of the water for about 25 or 30 fathoms in length. Its strike would appear to be east and west nearly, and its dip very slightly toward the north. Immediately above the lignite there is a stratum of about 4 feet in thickness of sandy

clay and pebbles. This was overlaid by 6 feet of shingle composed mostly of pieces of limestone, slightly held or agglomerated together. Above this again there was 6 or 8 feet of sand and sandy loam.

To be workable, I think the stratum forming the roof of the coal would require to be firmer (more compact) than where it is seen at the out-crop, but as it dips north, and the ground rises somewhat in that direction, the roof would most likely become firmer as it took cover, or got deeper below the surface."

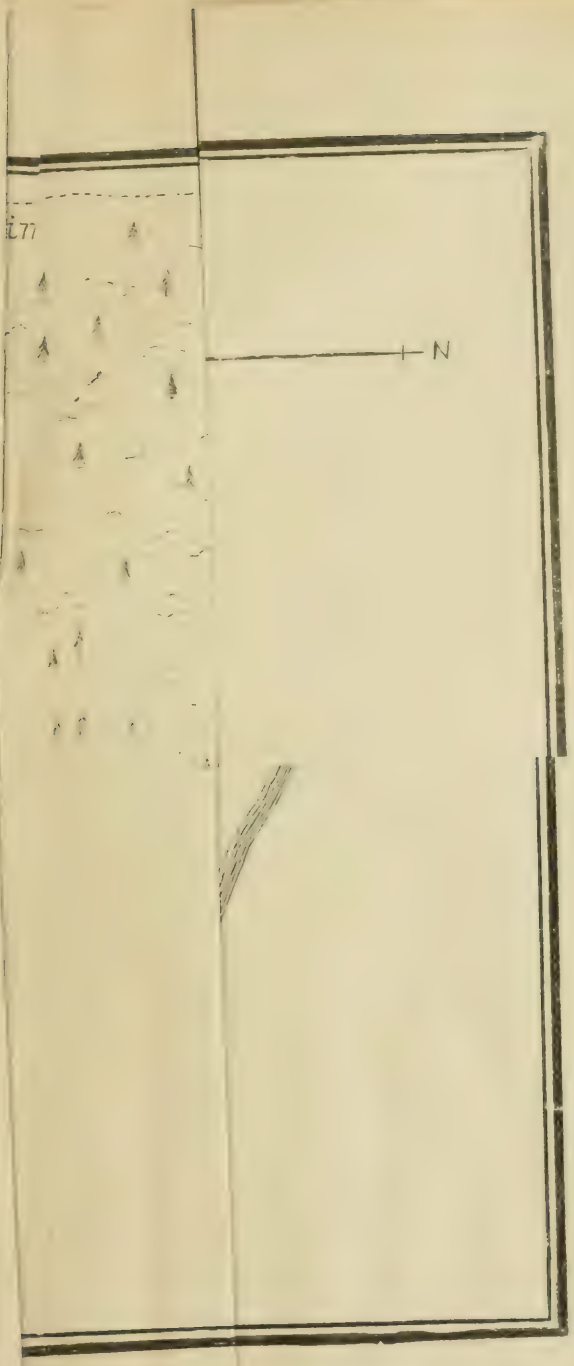
The out-crop of this bed of lignite at the time above referred to—almost on a level with the water of the river—was this year (a month later in the season) from 3 to 6 feet above it. During the spring freshet, I have no doubt that it is entirely under water. No time was lost in setting John Cullis—a practical miner—with one of the voyageurs, to drive in on the bed from the river, while another party was sent to bore down with our "prospecting auger" at a point on the river bottom, some distance inland from, and a little higher than the immediate bank of the river.

It may be proper to mention here that this prospecting auger was obtained from the Peirce Well-Sinking & Oil-Well Supply Company of New York. As everything had to be taken in canoes and carried on the men's backs over numerous portages, I selected this auger, after some inquiry, as being, in my opinion, lighter and more portable, and on the whole better suited to our purpose, than any other. It bored a hole $4\frac{1}{2}$ inches in diameter. The rods made from malleable iron gas-tubing, and $1\frac{5}{8}$ inches in diameter, were in 5 feet lengths and could be easily handled. These screwed together by means of thimbles, and length by length could be added as the hole deepened. We took with us a sufficient number of these, to enable us to sink fifty feet in depth, where necessary, and the nature of the material to be bored through would admit. The auger was turned or worked like a common wood auger. The cross-head for this purpose could not be obtained from New York without occasioning delay. With the kind permission however of the officer in charge at Moose factory, the blacksmiths there designed and made one for us which could be attached or screwed on to any part of the rods, and answered the purpose very well. The necessity we were under of drawing up the auger every nine or ten inches in order to clean out "the pod," immediately above "the bit," and which was accomplished by means of block and tackle, took up a great deal of time, especially when the hole had attained such a depth as to require the putting up of a triangle. As a substitute for the triangle, we frequently took advantage of an inclined or over-hanging tree, if one could be found at or near where we wished to bore. Up this tree one of the Indians would climb with a small axe stuck in his belt, and clearing away such limbs as might be in the way, fasten the upper block 30, 40 or 50 feet above the ground. This was very convenient and expeditious where suitable trees—and such as could be climbed without serious risk to the man's neck or limbs—were handy. We should have found a pair of the climbers or spurs such as are employed by those men whose business it is to ascend telegraph and electric light poles, exceedingly useful.

Such an auger as that here referred to would I was quite aware be utterly worthless for boring through rock, but I did not expect to meet with any beds of solid rock, overlying the lignite in this territory, nor did we do so in any of the holes put down this season. In drift or loose material, moderately dry, and comparatively free from stones, whether of sand or clay, or an admixture of the two, it answered all that could be expected of such a tool. But in coarse gravel or drift containing many boulders or stones, it was all but useless.

On the river bottom at the Big rapids we found after repeated attempts that it was impossible to bore down to the bed of lignite with the auger. About 17 feet was the greatest depth attained. In this and other holes, the auger came upon stones of such size that we had to desist for fear of breaking it.

Three or four cuts were however made into the bank from the river. These are shown upon the plan or survey of this point, as also in the photograph which accompany this report.


N

APPROXIMATE SURVEYS

OF

COAL BROOK,

SHOWING LOCATION OF LIGNITE

AND

WORKINGS THEREON.

Scale 1 to 50 1 inch

SURVEYED AND DRAWN
— BY —
BROCK CAREY.

In the first cut the lignite proved to be about 2 feet only in thickness with sand, both above and below. The strike of the bed was apparently east and west with a very slight northerly dip. The quality of the lignite was not satisfactory, the wood or trunks of trees, of which it was principally composed, being imperfectly mineralized, and a good deal mixed with sand. The bank of the river at this point was seemingly 20 feet in height. The uppermost 10 feet consisted of sand, below which there was a stratum of gravel and stones of variable thickness, and under this lying both above and below the lignite, a pure light colored sand.

In the second cut the lignite was in three distinct bands. The first or lowest rested on sand and was 1 foot 5 inches in thickness. Above this was a stratum of sand 1 foot thick. Then another band of lignite 7 inches in thickness, and above that a second layer of sand 2 feet. Resting on this was a third band of lignite 8 inches thick. Above all these was about 3 feet of mixed sand and clay, followed in upward or ascending order by 6 feet of gravel and stones in an argillaceous sand, and at the top about 8 feet of sand.

In the third opening we found about 4 feet of mixed lignite coal and sand under cover of loose material, all apparently alluvial, such as that overlying the lignite in the second opening or cut.

The quality of this coal is not such as will, in my opinion, justify the expectation that it can be profitably mined and transported overland to distant markets in southern Ontario, to be there employed as fuel. It is no sooner taken out of the ground and exposed to the air, than drying, it begins to fall to pieces. Nothing however can be positively asserted on this point, where, as in this case, the coal is obtained so near the out-crop and at such a trifling depth.

Between this Big Rapid and Coal Brook several places are mentioned by Dr. Bell where lignite is met with in the banks of the Missinaibi River. Some of these beds I saw, others I could not find. They were possibly hidden from view by recent land slides which are very common on the south-east side of the river about where Dr. Bell saw these beds. Such as came under my notice did not seem to merit trial, in view of the limited time at my disposal and the more promising appearance of the bed at Coal Brook.

On our arrival at "Bubbling Water," however, a few miles above the junction of the Opazatika River, a point where a considerable volume of natural gas continually rises up to the surface, and which Dr. Bell attributed to the presence of lignite in the bottom of the river. I thought it would be desirable to remain a day or two and ascertain if possible whether Dr. Bell's conjecture was well founded or not.

We first tried to put down two holes, close to the west bank of the river, and opposite to where the bubbles of gas appeared to rise in the greatest abundance. At the depth of 5 feet, however, stones or boulders were met with in both, which prevented us from sinking deeper. We then tried about twenty yards from the bank, but there also met with like impediments at a depth of 15 feet. We then went back about 50 yards into the bush and tried again. At this place which was 8½ feet above the level of the water of the river, we succeeded in boring down 27 feet, or about 18½ feet below the level of the water, and 13 or 14 feet below that of the bottom of the river. Neither lignite nor gas were struck in any of these holes. The problem therefore as to the origin of this gas remains unsolved. In order to do this, it will be necessary most likely to bore to a much greater depth than was reached by us.

Coal Brook.—The position of this brook has been described in the preceding extract from Dr. Bell's report for 1877-78, and is also shown on the geological map of the Basin of Moose River. While this brook is, as Dr. Bell says, "a small discharge or channel which leaves the main river (Missinaibi) opposite the head of the fourth or river-side portage," it is also an independent stream. It is only, I suspect, during the spring freshets that much if any of the water of the main river flows through this channel, but from the appearance of the banks I should judge that there was at that time a very large quantity.

The bed of lignite described by Dr. Bell occurs on the west side of Coal Brook about half a mile above the junction. It appears in one place, but for a few yards in length only above the level of the water. A very little work however satisfied us that the

greater part of the bed was situated below the water level, and that we should on that account be unable to drive on it. The bank above the lignite is composed of drift, clay and sand, with some stones, and rises rapidly to a height of 100 feet. At a comparatively short distance to the south-west the ground is 150 or 200 feet, if not more, above the level of the brook, and the adjacent Missinaibi River. Indeed I am strongly of the opinion that the thickness or depth of the drift material overlying the bed rock, is greater here than in almost any other part of the territory.

On the opposite or east side of the brook the ground is lower and the brook a little above or to the south of the exposure of lignite referred to, turns or doubles back to such an extent as to form an island.

Our first attempt to bore down to the coal, which we were hopeful would underlie the whole of this low ground, was made on this island. It is marked No. 1 on the accompanying plan. This hole was put down 8½ feet. When coming to gravel and stones, it had to be abandoned.

No. 2 was started at a point a few yards distant from No. 1. Here we got down 21½ feet below the surface. The first 3 feet were sandy, passing gradually into drab colored clay with some gravel, and so continuing until at about 12 feet a bed of black carbonaceous clay was struck. This clay, with more or less lignite interbedded or mixed, continued for 5 feet. Below this, however, we came to a stratum of mixed sand, gravel and stones, which could not be penetrated with our auger.

We then crossed to the west side of the brook, and selecting a point on the bank about 21 feet above the water, almost immediately in the rear of where the principal exposure of lignite occurs, hole No. 3 was started. In this No. 3 hole, 20 feet of light bluish gray calcareous clay (drift) containing a few pebbles, was first passed through. A bed of black carbonaceous clay and lignite was then struck and proved to be 18 feet 10 inches in thickness. Interstratified with, but not included in the thickness of the above, were three bands of light grey, drab and variegated clay, either destitute of, or containing very little lime. The aggregate thickness of these was 3 feet. Below the black clay (or possibly shale) and lignite, we bored through 8½ feet of grey, drab, reddish and variegated clays, destitute like that above mentioned of lime or nearly so. And I am inclined to think a good fire clay.

Having bored this hole as deep as our rods would allow, we had of course to stop. In No. 4, the next hole, we were stopped by a stone at the depth of 5 feet. And in hole No. 5 by quicksand, having struck a spring of water at the depth of 8 feet. In No. 6, however, we were more fortunate. This hole was started like the three preceding ones, on the west side of the brook, but close to the edge of the water and only about 18 inches above it. It was somewhat further up the river than the place where the lignite appears in the bank as described by Dr. Bell. The coal could be seen, however, in the bottom of the brook in front of where we commenced to bore. The first 4 or 5 feet the auger passed through drab and variegated clay, slightly calcareous. Then followed 7 feet of lignite and black carbonaceous clay. Below this 2 feet of drab clay, followed by another stratum of black clay and lignite, 1 foot in thickness. Then 3 feet more of drab and variegated clay, succeeded by about 3 feet of sand and clay mixed. Underlying this there was a bed of lignite coal 2 feet in thickness. Then followed 2 feet of mixed sand and gravel, succeeded by 1 foot of variegated clay. We then, greatly to my surprise, struck a bed of fine white clay, into which we bored for 9 feet, when coming down on a stone with the auger we were unable to sink deeper. The total depth of this hole was 35 feet Of which about 10 feet were lignite and black carbonaceous clay, 11 feet drab and variegated clay, 5 feet grey argillaceous sand, and 9 feet were white clay.

This white clay is an interesting deposit. I have sent a sample of it to Ottawa for examination, but have no reply as yet. I hope, however, to receive it in time to be appended to this report.

The last hole having attained a depth of about 33 feet below the level of the water of Coal Brook, it was now my intention to bore a series of holes, in ascending order up the hill, and in a south-westerly direction. These were to be so arranged that the bottom

of each hole would be as low or on the same level as the mouth or top of the one which had preceded it. Thus, although unable with the tools we had to take in the whole from top to bottom with one hole, we should be almost certain to find them if any beds of lignite coal were situated higher than the brook, and cropped out anywhere in the face of the hill above.

With this view the next or seventh hole was started about 20 feet above the level of No. 6.

Hole No. 7, we had only bored 5 feet 10 inches when we struck a bed of lignite coal, and black carbonaceous clay 2½ feet in thickness. Above this seam or bed, the drift clay was calcareous, below the coal we found drab colored and variegated clays, which were smooth, unctuous and compact, and like the black carbonaceous clays contained no lime. After penetrating 10 feet 2 inches deeper our auger passed through a second seam of lignite and black clay 1 foot 7 inches in thickness. This was followed by drab clay about 4 feet in thickness. At this point another (the third) small seam of lignite and black clay was met with about 9 inches in thickness. Below this we had drab clay 2 feet 5 inches thick. Then another (making the fourth) bed of lignite and black clay, and 7 feet 2 inches in thickness. Under this lignite bed we struck an indurated clay, variegated in color at first, but gradually becoming white in another 2 feet. We were now down nearly 37 feet in all, the bottom of this hole being 17 feet below the level of the mouth of No. 6 hole, and about 15 feet below the brook. Here we stopped, the hardness of this bed of white clay being such as not only to render our progress slow, but endanger our auger. The aggregate thickness of the four seams of lignite coal thus bored through was 12 feet.

Hole No. 8, this hole was started 22 feet higher up the hill than last, and was bored to a depth of 23 feet, thus going down about a foot under the level of the mouth of that immediately below. The uppermost 12 feet passed through was a calcareous sand with sufficient clay to render it plastic. The color at first yellowish, becoming grey or light drab in depth. Below this, 5 feet of calcareous clay, then 2 feet of variegated clay (not calcareous), followed by 1 foot of lignite, and ending with 2 feet of mixed sand, clay and gravel.

The next hole of this series, No. 9, was started 24 feet above the last. We were only able to bore 17 feet at this place on account of stones. It left a gap of 7 feet between the top of the one and top of the other untested. The nature of the ground passed through, being a fine grey calcareous sand similar to that in hole below, satisfied me that there was no lignite bed in this intervening space.

Another hole, No. 10, was commenced 16 feet higher up than the last, and sunk to that depth in calcareous sand as before, nothing worthy of notice being met with.

A recent land-slide had left an almost vertical face or bank rising from the level of the last hole to the top of the ridge which is at this point a little over 100 feet above Coal Brook. If there had been any beds of lignite or other material of economic value, we should have seen them in the face of this bank. It was composed with the exception of one or two thin and almost horizontal strata of clay, entirely of a very fine light yellowish colored calcareous sand. The clay-bands were not more than 3 or 4 inches thick, but interesting as showing, that this portion of the great drift deposit had been slightly at all events modified since it was first deposited.

The ground on the top of the bank or ridge now reached is level, or rather falls away for a short distance, after which the surface again rises in a south-westerly direction to at least 200 feet in height. But the character of the surface material, and other circumstances did not appear such as called for further boring operations in that direction as our tools would not reach down to where the lignite beds already mentioned will be found should they extend from Coal Brook southward and westward under this high land. I see no reason why these beds should not extend to a considerable distance beneath this high ground, and if so I should confidently expect the coal to be of much better quality than any yet obtained on this river.

I now again turned my attention to the low ground or river bottom, lying on the east side of Coal Brook, being anxious to ascertain if the bed of lignite partially exposed in the bank and penetrated by the third, sixth and seventh holes bored as well as the underlying white clay extended beneath this low ground.

We selected a spot on the east side, and immediately opposite to the third hole, and also where the lignite crops out on the west bank.

This hole, No. 11, and others, will be found marked on the plan. We only managed to bore down, however, about 9 feet when we struck large stones and were unable to go deeper. Down to this point the auger passed through coarse sand with some gravel and small stones all alluvial or deposited by the river.

Twelve other holes were started, ten of which were situated on this flat bottom land. In no instance did we succeed in boring to a greater depth than 13½ feet. Near the surface the material was generally sandy, with more or less gravel and occasionally stones. But at or about the depth mentioned the stones became so numerous that the holes had to be abandoned.

Finally, John Cullis and one of my Indian voyageurs commenced to sink a pit. The soil at first a sandy loam, soon became a pure river sand. At 10 feet in depth it became necessary "to timber" their shaft, which was done as well as the means at their disposal would permit. Two or three feet deeper, however, they came to gravel and stones forming at one time (as I think) the bed or bottom of the river. From this a considerable quantity of water rose, keeping two men pretty busy draining it with an extemporised apparatus consisting of a pork barrel, rope and pulley. Cullis tried hard to get down through this stratum of gravel and stones, but in vain, the flow of water rapidly undermined the sand above, and the ends of the timber losing their support, the shaft seemed likely to crush or run together. It was already, when after a short absence, I came to see it much twisted, and dreading the possibility, even of an accident, which if it occurred might be serious. I ordered him to desist. Our intention had been (could we have got through this old river bed) to have then bored down with our auger, from and below the bottom of the shaft. In view of the quantity of water and of the insufficiency of the means at our disposal to deal with it, we made no further attempt to sink in this manner. Nevertheless, it is only by actual mining operations of this nature-sinking pits and driving levels, drifts or galleries, that the quality of this lignite coal, and even its workable character and extent can be fully and satisfactorily ascertained.

Of the remaining holes bored, only No. 19 merits special notice, being one of those in which coal was struck. In this hole lignite was met with at a depth of 4 feet, which continued to 5½ feet. This was followed by clay, which continued to 11½ feet. From which point to 30½ feet in depth, alternate bands of lignite, black, reddish and drab clays were passed through, all probably parts of one bed 19 feet or thereabout in thickness. Below this variegated, white and drab colored clays, were bored through in the next 10 feet, the hole ending at 40½ feet in depth in white sand.

Hole No. 12, was put down 16½ feet with great difficulty in a very hard and tough grey calcareous clay, containing small stones and pebbles. This is, in my opinion, an unstratified drift deposit, underlying most, if not all, the sands, gravels and clays previously mentioned, and forming, I suspect, "the rim," if not the bottom, also, of the trough or basin in which the lignite coal and its associated clays are situated. I was very sorry that we could not test that point by boring deeper here. But to have persisted longer would have ruined our auger. Although the results obtained are in some important respects satisfactory, there are some points left doubtful, which I should have been glad to have seen cleared up.

The lignite and its associated clays, which in "coal-measures" of greater age would be black shales, are found in much thicker beds than I expected. They vary, as will have been seen, from 1 or 2 feet to 19 feet in thickness. What proportion the coal bears to the shale in these beds, owing to the mixed condition in which the auger brought up the material of the different bands passed through, is left more doubtful than I could have wished, and only to be determined by a very considerable number of analyses of carefully

taken samples. As a matter of opinion, and judging from the appearance of what was brought up by the auger, I should say that in the deepest and apparently thickest beds, not less than 6 feet or probably more than 9 feet may be lignite coal.

The establishment of the fact that these beds underlie at all events the greater part of the drift or glacial deposits, is I think important in relation to the extent or area occupied by the lignite. Taken in connection with the existence of lignite on the Mattagami River under very similar circumstances, I am of opinion that there is probably a continuous belt of lignite-bearing country between these two points, which are about fifty miles apart. And that it may extend a considerable distance west of the Missinaibi and east of the Mattagami. This bed of lignite was discovered by the writer when ascending the Mattagami River on his return from Moose Factory in 1882, a few miles below the Long Portage. I have no data to guide me in forming a reliable opinion as to the width of this belt should it prove continuous between the points named, but I hardly think it will be less than ten or more than twenty miles.

I may observe in conclusion under this head, that even if the quality of the lignite in this territory should not be such as to warrant the expectation that it will ever successfully compete with, or supersede the use in Southern Ontario, of coal from the United States or Maritime Provinces, it will certainly be of great value and importance to the future inhabitants of the territory itself, inclusive of those on the height-of-land plateau.

There is, however, a very important purpose, other than that of fuel, which it may serve, and in connection with which it may prove of greater value than common coal. Lignite is, I believe, found to be of great importance in the most recent and successful mode of treating sewage. If it be found that by this method health is promoted, and at the same time some of the elements of the sewage, most valuable to the farmer can be preserved, and utilized in restoring fertility to the soil, a demand may arise for an almost unlimited amount of this lignite, at prices far beyond those of ordinary coal. I have heard that the lignite hitherto employed for this purpose is actually imported from Europe, but hardly believe that there can be any necessity for so doing unless it be much scarcer on this continent than I had any idea was the case. I have not had any opportunity of seeing this new method of treating sewage in operation, or of making myself thoroughly acquainted with the process and its results, but throw out this suggestion, as one at least of the possibilities of the future which may render the lignite-coal found in this part of Ontario of importance and value.

Kaolin or China Clay.—This important and rare clay was discovered by the writer on his trip to Moose Factory in 1880. And is described in his report for that year, as follows:—The further discovery of kaolin or china clay on the Missinaibi branch of the Moose River will, I trust, also prove of some importance.

I have submitted a sample of this clay, taken haphazard from the bank as I passed, to Professor H. H. Croft, well known in this city, and from him I have received the following report:—

"*Clay from the north, left by Mr. Borron:*

"The clay is only air dried, and contains about five per cent. of moisture, more accurately 5.15. In mass it is not quite white, but when finely ground becomes nearly so. (See specimen No. 1.) When ground and washed or suspended in water in the usual manner of preparing clay, the faint coloration remained. (No. 2.) There was a very slight remnant of sand or gritty matters, sand presumably. No remnants of shells could be detected under the microscope. Acted on by acids, it showed only a very small, almost imperceptible effervescence, hence, but little carbonate of lime; a trace of that salt was detected and an infinitesimal trace of magnesia. The whole amount extracted from the clay by acid was 1.5 ($1\frac{1}{2}$) per cent. of which the most was alumina.

"I have not thought it necessary to make an accurate quantitative analysis, as I am informed that the sample was simply fished out of the river without care, and that probably, a much cleaner specimen could be obtained. When burnt the original clay

does not darken to any extent, showing the absence of any organic matter. It acquires when so treated, a faint pink tinge, and the same after having been treated with acid, hence, a very small quantity of iron oxide in some form. The clay seems to me to be such that after proper grinding, washing, etc., it would be nearly, if not quite, equal to the Cornish clay used in the manufacture of English porcelain. Allow me to add that I do not compare this clay with that of Dresden (Méissen) in Germany or Sèvres in France.

"P.S.—I should add that the clay is perfectly plastic and can be moulded as any other kind of good clay."

The manufacture of porcelain or china is confined to a few localities even in Europe, principally because the fine clay called kaolin or china clay is rarely found. Sèvres in France, and Méissen, near Dresden, in Germany, are celebrated for the excellence of their porcelain, the clays at those places being of great purity. In Staffordshire, England, very fine porcelain is also made, and the quantity manufactured greatly exceeds that either of France or Germany. Some idea of the importance of this industry may be formed from the fact that the potteries, as they are called, give employment to 100,000 operatives, only a portion of these, however, are engaged in the manufacture of china or porcelain.

The kaolin or china clay is not obtained on the spot, but brought from Devonshire and Cornwall, principally the latter. The quantity of porcelain clay and china stone taken out in Cornwall and Devonshire twenty years ago, was about eighty-eight thousand tons per annum. I am not aware at what places, if any, on this continent, fine porcelain clay has been found, but think at any rate that it has not been discovered in workable quantity in Canada. I believe there are a few manufactories of china or porcelain in the United States, but how much of the clay is obtained in the country and how much imported, I have no means of ascertaining.

It will be observed that the clay found by me on the Missinaibi branch of the Moose River is considered by Professor Croft, as nearly, if not quite equal, to the Cornish clay used in the manufacture of English porcelain.

Should the deposit be found (as I believe it will be found) extensive, and the quantity large, situated as this clay is, within a few miles of beds of lignite or brown coal, if not also of peat, it cannot fail, I think, to become of importance as soon as the country is opened up."

This kaolin deposit is on the same side of the Missinaibi River as Coal Brook, and about five miles below the junction. Before leaving therefore on my return last year, I devoted a few days to an examination of it.

It shows in irregular patches in the east bank, and very little above the level of the water of the river. These quickly catch the eye of an explorer on account of the singularity and brightness of some of the colours (especially pink and brown) which are imparted to the kaolin in spots, as I suppose by metallic oxides.

The kaolin forms part of an immense bank or mound of beautiful white sand which extends along the river at least a mile, and rises to a height of not less than one hundred feet.

This sand is, in my opinion, a product of the glacial epoch, or in other words is "a drift sand." It was originally, or when in state of rock, probably a very light colored granite, composed of a colorless (translucent) quartz, white felspar and a very small proportion of white mica. Where this rock is *in situ* I am quite unable to conjecture. If it be at some point in the north, as I believe, that point cannot be nearer than one hundred miles, and is probably a much greater distance. Wherever it may be, I am fully persuaded that this material has been quarried, ground, transported and finally "dumped down" where we now find it, by ice. Possibly the felspar in the rock may have been more or less decomposed when it formed a part of the granite rock. But whether or not this felspar is much softer, at any rate, than the other and principal element of the granite

—"quartz"—and my observation leads me to believe that in whatever way or manner the ice sheet has reduced solid rock to the condition of the loose material included under the general name of "drift," "till," "boulder-clay, etc.," that the softer the original rock or mineral the finer the sand or powder to which it has been reduced. Hence, I infer that when this granitic sand was first deposited, the felspar was most likely ground or pulverised to what may be called an "impalpable" powder, while the harder quartz element was only reduced to the state of sand. If therefore the felspar was not decomposed while the original granite rock was *in situ*, this decomposition which has resulted in the production of kaolin or china clay, must have occurred since the glacial period, or for the most part subsequent to its deposition. That this has been the case, I think, in view of the exceedingly fine floury condition to which the felspar had been brought, at least probable.

I was disposed to regard and call this vast deposit "felspathic sand," but the examination, microscopic and otherwise, to which it has been submitted by Dr. Bell and Mr. Hoffman, of the Geological Survey, satisfy me, that although a little of the felspar remains still undecomposed, the far greater portion has already been converted into kaolin.

Such being, as I conceive, the origin of this deposit, it is quite in accordance with this theory, that the kaolin should be found distributed as a fine white powder in the sand, dusting and incrusting as it were, the grains of quartz. And this was found to be the case in every sample taken, even from parts of the bank one hundred feet above the level of the river. As might naturally be expected, however, the percolation of water downwards from the surface on which it has been falling for thousands of years in the form of rain or snow, has carried with it more or less of the fine particles of kaolin to the lower part of the bank. We consequently find that this kaolin clay is far more abundant in the lower part, and most abundant of all at or about the level at which this surface water escapes into the main river, and its tributary brooks, several of which cut through or have their source in this deposit. Hence, wherever springs of water are met with, either on the east bank of the river or in the ravines where this deposit is situated, there we find the china clay in the form of patches or beds of considerable extent.

The quantity of this sand is simply inexhaustible. And it can not only be obtained with the greatest ease, but by a very simple and inexpensive mode of washing (or treatment by water) the kaolin and the quartzose sand can be readily separated.

Both materials are valuable in an economic point of view, the kaolin for the manufacture of china, and the white translucent quartzose sand for the manufacture of glass.

With cheap means of transport I believe both would be largely used in the United States. The kaolin used in the potteries of the United States for the manufacture of china, is, I believe, principally, if not entirely, imported from Europe, probably from England.

With a railway, I am of opinion, it could be supplied of equal quality and at a lower price from this kaolin deposit in the north.

As regards the sand, I have had some experience in glassmaking, and seen the finest sands employed for that purpose both in England and Scotland. I have no hesitation in saying that this Moose River sand is greatly superior to any obtained in either country. And that it will sooner or later be very largely used in the manufacture of the finer descriptions of glass on this continent.

In the Appendix to this report will be found the result of Mr. Hoffman's examination of this kaolin and sand, which has been kindly sent me by Dr. Selwyn, C.M.G., LL.D., Director of the Geological and Natural History Survey.

Iron Ore.—Dr. Bell was also the first to call attention to the deposits of iron ore in this territory, especially to that on the Mattagami branch of Moose river at the foot of the Grand Rapid some eighteen miles or so below the Long Portage. In speaking of this ore Dr. Bell says: "The position of the deposit is on the north-west side of the river, at the

foot of the rapids. It runs along the cliff for a distance of upwards of 300 yards, with an exposed breadth of twenty to twenty-five yards. The highest points rise about fifteen feet above the level of the river. The surface is mottled, reddish-yellow and brown, and has a rough, spongy, or 'lumpy' appearance, like that of a great mass of bog ore. On the surface, and sometimes to a depth of several inches, it is a compact, brown hematite, occasionally in botryoidal crusts, with a radiating columnar structure; but deeper down it is a dark-grey, compact, very finely crystalline spathic ore, apparently of a pure quality. The brown hematite evidently results from the conversion of the carbonate. The former yields, according to the analysis of Mr. Hoffman, 52.42 per cent. of metallic iron, while the latter shows a very small amount of insoluble matter; indeed there is, chemically, little room for impurities, since it gives rise to so rich a brown hematite." I have myself seen this deposit, and am satisfied, that any quantity of this ore can be obtained at a very low rate; and that associated as it is with lignite and peat for fuel, it will unquestionably be mined and smelted on the spot at no very distant day.

I have found the same kind of ore *in situ* on the Oba River, about 20 miles above Mamattawa, and have seen indications of its presence on several other rivers. It is my opinion that it will be found (when wanted) in many places on or near the southern edge of this palæozoic plain or coast-belt in inexhaustible quantity.

Potter's Clay.—The fine white clay found under the lignite beds, at Coal Brook last summer, and into which we bored at one place no less than nine feet, is not in my opinion kaolin although it resembles it in appearance. I take it to be what is commonly called "potter's-clay." If it does not contain too much lime, this clay should make good white earthenware, for which purpose enormous quantities are required. There is seemingly plenty of it at Coal Brook, and doubtless elsewhere in the same belt of country, and the depth at which it is found is so trifling that when the territory is opened, it can be easily and cheaply got should there be a demand for it, at remunerative prices.

Fire-Clay.—Some of the other clays associated with the lignite at Coal Brook, appear as if they might be good fire-clays, and as such useful for many important purposes. In all metallurgical or smelting operations, good fire-clay and fire-bricks are indispensable, and should the smelting of the iron ores in this territory be engaged in at some future day, these fire-clays will be available.

Ochres.—Both brown and yellow ochres as noticed in my report for 1882-83, are met with on the Mattagami river, between the Grand Rapid and Long Portage. They appeared to be of good quality.

Peat.—Although "peat" cannot properly be called "a mineral," where its principal use is as fuel, and seeing that in many countries it is a substitute for coal, I may be permitted to include it (as well as lignite) under this head.

In my Reports for 1880 and 1882 much space was given to this, as I then believed, important product of this territory. I am still of the same opinion, and may repeat what was said on this subject in the last mentioned report, namely:

"In my Report for 1880, p. XI, *et seq*, the importance to the Province of an abundant supply of cheap fuel was discussed at considerable length. It was shown that wood must, necessarily, become scarcer and dearer; that we are already obliged to import very large quantities of coal, both for domestic use and for manufactures; that the distance from the coal mines of Nova Scotia was such as to afford no reasonable propect of our being able to obtain coals from that quarter at other than exorbitant prices; that we were, in fact, dependent upon the United States for our supply of one of the most indispensable necessaries of life. I might have added that in such a climate as ours, dependence on a foreign power for fuel, places us almost entirely at its mercy.

"It was shown, however, that in the so-called disputed territory there is an almost unlimited supply of fuel, partly in the shape of seams of lignite, or brown coal, but chiefly in the form of great beds of genuine peat.

"I quoted from various authorities, but more particularly from Dr. Sterry Hunt, facts which conclusively prove the importance and value of peat as a fuel, even when it contains as much as forty-five per cent. of water. It was further shown that with cheap transportation by rail or otherwise, charcoal made from compressed peat might be delivered in our cities at prices that would render the inhabitants in a great measure independent of foreign supplies of fuel, at least for domestic purposes.

"In last year's Report, p. 11, I again reverted to this important subject, showing that even at the lowest estimate the heat-giving power of the peat-beds in this territory is so enormous as to be almost incredible, and expressing an opinion, that before another fifty years have elapsed, this bountiful provision of fuel will, by means of electricity or otherwise, be made to contribute in no small measure to the welfare and comfort of the people of this Province. Since I thus wrote, some progress has been made in this direction. Experiments on a large scale are, I believe, being conducted both in Europe and America, the object of which is to substitute electro-magnetic engines for ordinary locomotives on railways. I am not conversant with the details, but as I understand it, the electric fluid is generated or supplied by stationary engines at each end of the line, if short, but at stated intervals if the road is long. The engines that generate the electricity, which in turn propels the train, may themselves be worked by steam or water. These stationary engines too, may be many miles distant, not only from the train and its load, but if desirable, from the railway itself. All, I believe, that is really essential being, that the electricity thus generated shall be conducted without material loss or waste by means of wires or otherwise, from the stationary engine to the electro-magnetic engine which accompanies the train; or the electricity may be stored according to Mr. Faure's method, on the point of being patented and introduced into Canada.

"If this system be at all successful, in an economic point of view, with stationary engines worked by steam, the problem of the utilization of the vast stores of peat and lignite of this territory is, I am persuaded, in a fair way to be solved. The height of land is an extensive plateau, and not a sharply defined ridge. This plateau is full of lakes each giving birth to streams of water which, uniting, soon become rivers. Some of these flow to the north, and others to the south. This plateau is from a thousand to twelve hundred feet above the level of the sea; and from five to seven hundred feet above Lakes Superior and Huron. Hence the rivers for many miles on both sides the height of land offer a succession of rapids and falls. These afford water powers, the equal of which cannot, in my opinion, be found on this continent, if in any other part of the world. The lakes by which the streams and rivers are fed, constitute, in fact, great natural reservoirs, by means of which, a constant and steady supply of water, *at all seasons*, can be easily ensured. It is obvious, therefore, that if this method of propelling or drawing trains should prove successful, the *motive power* necessary to transport fuel from the north to our very doors would cost literally nothing but the machinery required to apply it to that purpose. Such a reduction in the cost of transportation as this presupposes, would probably enable us to obtain abundant and cheap fuel for generations to come from our own territory."

In conclusion, under this head, I beg to be allowed to offer one suggestion for the consideration of the Government. The mining of lignite—coal, and the getting out of kaolin, potter's clay, and fine sand, etc., is not subject to the risk and uncertainty attendant on most other kinds of mining. These minerals too have already been discovered, and the limits within which they will in all probability be found, pointed out. Under these circumstances, I am strongly of opinion that in the general interest, whatever price the land be sold for, or in whatever quantity, a small royalty if not more than from ten cents per ton on sand to fifty cents per ton on kaolin and the other minerals in proportion, should be insisted upon. It may afford a very large and permanent revenue some day or other, and no one so far as I can see—and I am an old miner—has any more right to complain than has the lumberman at being obliged to pay dues on the pine timber he cuts and sends to market.

THE SOCIAL CONDITION OF THE NATIVES AND OTHERS.

In my first report, the condition of the inhabitants of this northerly part of the Province was described as follows :

"The whole of the vast country over which the Hon. the Hudson's Bay Company carry on their fur trade is divided into departments, each of which is the size of a good large kingdom in the Old World. This territory is a portion only of that called the Southern Department. Each department is subdivided into districts, with trading posts, called "forts" or "houses" in each. The number of Indians, or at all events the number of hunters, in each district, is known to the officers at the respective posts. But while our portion of the territory includes the whole of some of these districts, it more frequently only takes in parts of them, and hence it is impossible to form other than a very vague estimate of the population. With the very imperfect information before me, I estimate the population, both native and European, of the territory, at from two thousand to two thousand five hundred only, or one inhabitant for every twenty or thirty square miles. But there is still a greater difficulty in determining the race than even the population. After the alliances by marriage and otherwise, which have been going on for two centuries, to draw the line between whites and Indians, with any degree of precision is, in my humble opinion, simply impossible. Quite a large proportion of the natives of the territory, that I have seen, appear to have more or less European blood in their veins.

"To understand the social condition of the natives of this country we must in the first place consider their position in reference to the Hudson's Bay Company. The charter granted by Charles the Second to the Hudson's Bay Company, conferred on them "the exclusive right of trade in Hudson's Bay and its waters, and all the lands and territories on their confines, not possessed by the subjects of any other Christian prince or State." The monopoly then created has, with the exception of the period during which it was disputed by the North-west Company, existed to the present time, so far as this portion of the territories in question is concerned. It is true that ten years ago, when the whole territory was made over to Canada, the Company's exclusive right of trade terminated, but owing to the great difficulty and expense of taking supplies of goods and provisions into the territory, by any other route than Hudson's Straits, the trade is just as completely in the hands of the Company now as it was before.

"We must next take into consideration the change that has taken place in the population and that the natives of to-day are, for the most part, and in many important respects, very different from the natives of this territory two hundred years ago. At that time the natives were all Indians with only the wants of the savage. The furs which he was willing to barter or trade were obtained from animals that he would at any rate have hunted and killed for the sake of the food they afforded him. His wants were few and simple, and the waters and the forest supplied them. His furs were most likely bartered in the outset, for trinkets and baubles of little or no earthly use to him, and he could live just as well without as with them. In course of time, when trinkets became too common, other and more useful articles were necessary to carry on the trade. The natives of the present day are not all Indians—some are altogether, and a considerable portion are, as has been observed elsewhere, more or less of our own race and blood. They have, in the course of two centuries, become dependent on the fur trade not merely for ornaments, or even luxuries, but for the very necessaries of life. They have to some extent either inherited or acquired new wants, tastes and feelings. Any intelligent man must see that a monopoly of the trade now is a very different thing from a monopoly in 1670, so far as it affects or may affect the native population. The power thus placed in the hands of the Company's officers, although negative, so to speak, in its nature, has been almost unlimited, and in a great measure irresponsible. They might if so disposed, refuse to buy from any man the only article the country afforded (furs), possessing any exchangeable value. They could give him as much or as little as they pleased. It was impossible for him to sell his furs elsewhere for there was no one to buy them. They could withhold not merely the luxuries but the necessaries of life—flour, pork, tallow, and woollen clothing and blankets having now become

necessaries of life to many of the present generation of natives, and powder, shot, guns, axes and nets, etc., having become equally indispensable to the rudest Indian. These officers could, it appears to me, if prompted to do so by ill-will or other motives, reduce a man and his family to absolute want and misery: and that, too, without so much as breaking the letter of any one of the Ten Commandments or bringing themselves under the lash of the law. Nor would such acts of oppression necessarily be heard of outside of the territory in which they occurred.

"All the commissioned officers being shareholders or participators in the profits, the interest of the Company and that of its chief officers in the fur trade is one and the same. That interest is, as I conceive, to obtain the furs for the smallest price compatible with their being caught at all. The interest of the hunter or trapper is, on the other hand, to obtain the greatest price for his furs that is consistent with the trade being carried on at all. Thus the interest of the hunter or trapper, and that of the Company and its officers are antagonistic in regard to the price of the furs, whether the same be paid for in money or in goods.

"With such diversity of interest, and the power entirely in the hands of the Company and its officers, we can come to no other conclusion than that the power thus possessed has been used to promote the Company's interest as the first and chief, if not the only, consideration.

"The position of the natives of this territory in relation to the Hudson's Bay Company and its officers has, therefore, been for many years and still continues to be, a position of absolute subservience and dependence.

"Such a position, up to a certain point in the civilization of a savage race, may not be an unmitigated evil. There are not wanting those who maintain that it is no evil at any stage, of civilization, provided that the governing and directing power is not only just but mild and paternal. I shall not discuss this question—merely contending that the stage, if there be such, previous to which dependence and subserviency are beneficial even to the subservient race, has now been reached by the natives of this territory, and that its prolongation is altogether undesirable, inasmuch as it is unjust to the natives, impedes their further progress, retards the development and settlement of the country, and is inconsistent with the whole tenor and spirit of our institutions.

"The remedy, and only remedy in my humble opinion, for this state of things is to open up this territory, and that done, the rest may be safely left to the natives themselves, and to the energy, industry and enterprise of the people of Canada.

"In thus putting the relation in which the native population stands to the Hudson's Bay Company in what I conceive to be its true light, nothing has been further from my intention than to lead anyone to suppose that the Company and its officers have made a more selfish and unscrupulous use of their privileges and power than any other company or officers in like circumstances would have done. On the contrary, I sincerely believe that like arbitrary and excessive powers have perhaps never been exercised with greater moderation or more rarely abused by any other company whatever."

"The Indians on or near the Coast of James' Bay belong to the Swampy Cree tribe, and speak a dialect of the Cree language. Those at Abittibi Lake, and on or about the height of land belong, I am told, to the Chippewa tribe, and speak the Ojibbewa language. Those persons of mixed race or blood in this territory, are the offspring of Indian mothers and English, Scotch, or Scandinavian fathers, and subsequent intermarriages. Physically the natives are on the whole a fine race. At Moose Factory the only language spoken, excepting Indian, is English—more or less of which a majority of the natives can understand and many of them speak. The Hudson's Bay Company's trading posts are usually situated near lakes or rivers where fish is more or less plentiful. The natives appear to congregate at posts like Abittibi, and Moose Factory, soon after the ice leaves the rivers, and remain there most of the summer. It is their season for social intercourse, which the young, at least, seem to enjoy. The women and children set out and attend to the fishing nets, while the men either hunt, or find employment voyaging, making hay, and such like work at the posts.

"They generally live in canvas tents during the summer, but prefer the wigwam of birch bark in the winter. The Indian dress or costume, if it can be so called, has been discarded, and our style of dress has been adopted with the exception of boots and shoes, which have not as yet entirely superseded the mocassin.

"They may, and sometimes do, suffer great privations and hardships during the winter, if game (the rabbit especially) should be scarce, or if sickness should prevent them from hunting. But during the summer they are not only sufficiently clothed to protect them from the weather, but so far as I could judge, they had enough to eat, both at Abittibi and Moose Factory. They will, however, eat almost anything, from a bear down to a skunk, a fact of which I have had occular and other demonstration. To the tender-hearted and humane, sometimes shocked to think of poor creatures being taken and destroyed by thousands and tens of thousands, simply for the sake of their skins or fur, it may be some satisfaction to learn, that in this territory at least, the flesh of the animals thus taken is used as food by the natives. The only people I know of—less fastidious in this matter of food—are the neighbouring Esquimaux, who, I have been informed, will not only feed upon meat in the most disgusting state of decomposition, but do not hesitate, at a pinch, to eat the carcasses of dogs which have died of hydrophobia or have been destroyed because they were mad. To those who do not know that some poisons, which are fatal if introduced into the circulation of the blood directly, are quite harmless when introduced into the stomach or taken with food, this circumstance will doubtless appear incredible. Both the Indians of this territory and the Esquimaux to the north, are naturally flesh eaters, and the dreadful straits to which they are sometimes reduced, when fish and game fail, compel them to make use of anything and everything of the nature of animal food which they can get.

"To such hunting and flesh-eating people, a good market for their skins and furs was and still is, a matter of primary importance. Before traders were attracted to the country, the skins of most of the animals that the natives pursued and killed for food, were doubtless thrown away as useless, or probably consumed with the flesh, after the fur or hair had been singed or burnt off. Even if the early traders gave but few articles of much value or utility in exchange for furs in the first instance, these few were so much clear gain to the Indian. When in course of time, guns, nets, traps, axes, knives and other things of the greatest use and value, were obtainable in exchange for peltries—the fur—trade, if not an unallowed blessing, was a boon to the natives, the importance of which can hardly be conceived.

The long continued and familiar intercourse with our countrymen which the prosecution of this trade for upwards of two centuries has necessitated, must of itself, have exercised an important and favorable influence on the Indians' character, imparting to them as it has done some knowledge of our arts, usages, laws, and customs, and preparing them for a higher social condition.

The Indians of this territory appear to labor willingly whenever they can obtain employment. They work on the farms at the Company's posts, but cultivate nothing whatever for themselves, nor do they keep or breed any domestic animals, with the exception of the dog.

They are fond of flour, having acquired a taste for it, as well as oatmeal. Some twelve hundred barrels of flour, beside biscuit and oatmeal, are brought out from England to Moose Factory by the Company's ship annually. At Abittibi, the Indians numbering about 400 souls consume about 400 bags of flour, or 100 lbs. per head annually. A large quantity of tea is used in proportion to the population, the natives being very fond of strong tea and drinking it at every meal when they can get it. The consumption of tea by the natives at some of the posts, averages five pounds per head per annum.

The tariff, more particularly that part of it which imposes fifty cents custom duty on each barrel of flour imported from England, is not at all popular, nor likely to become so in this country, the people of which are taxed heavily and receive no benefit whatever in return.

I am informed that the Indians in the greater portion of this territory are not divided into bands, nor have they any chiefs. Family ties would appear to form the principal, if not only, bond of union ; excepting, perhaps, that weaker one which arises from the circumstance of a number of families trading their furs, and obtaining their supplies, at the same post ; where as mentioned already, they congregate and frequently remain for several months during the summer, to be scattered again as winter approaches. It requires a large extent of country to furnish game and furred animals sufficient for the support of a family, and hence their mode of life does not admit of their living in communities however small, during the winter season.

It is to be hoped that the Dominion Government will neither appoint nor recognize chiefs, in this territory at least. They can be of no use or advantage, that I am aware of, to the other Indians ; and will probably (if appointed) be here, as they are in some instances elsewhere, little better than a nuisance.

It should rather be the aim of the Government, in my opinion to abolish all tribal and other divisions founded on differences of race only, than to encourage their growth and perpetuation.

As one step in this direction, the Indians should, I think, be able to obtain their enfranchisement, and to commute their annuities, on much easier terms than any as yet proposed.

The officers and servants of the Hudson's Bay Company in this territory are mostly natives of England and Scotland, principally of the northern Islands and Highlands of Scotland. They usually enter into a formal written engagement to serve for five years, and are brought out in the Company's ships. They get a free passage home at the expiration of their engagement, should they wish to return. Some of these men remain in the Company's service all their lives, others find their way to Manitoba, Lake Superior, or to the Upper Ottawa. The greater number of those who come to Moose factory would appear to return to Scotland when they leave the Company's service. There is no encouragement for any of them to settle in the territory itself ; nor, until the country is opened up, do I see very well how they could live if they did so.

Religion.—The natives of this territory, are for the most part, I think, nominally Christians ; but there are still some who cling to their ancient faith.

Those who profess christianity, belonging almost entirely to the Catholic and Episcopalian Churches. The Indians at Abittibi being almost exclusively Catholics ; and those at Moose Factory as exclusively members of the Church of England. At Albany, I have been informed that about two-thirds of the christian population is Catholic, and one-third Protestant.

The Catholic Missionaries at Temiscaming visit the different posts from thence to Albany Fort, during the summer, when, as observed before, the Indians are usually assembled in considerable numbers, at the Hudson's Bay Company's Post. They have as yet, however, no resident priests in the territory but have a church at Abittibi, and one also, if I am not mistaken, at Albany.

The Church of England is more fully organized ; This territory forming a portion of the diocese of Moosonee, of which the Right Reverend John Horden is the Bishop. The boundaries of the diocese, I do not exactly know, but it includes all the basin of Hudson's Bay. I am unable also to say how many resident clergymen there may be in the whole of the diocese, but there are four or five at different stations on or near the coast. The Bishop usually resides at Moose Factory, but is at present on duty at York Factory. The people at Moose Factory, both natives and European, are very decorous and regular in their attendance at church, and I was surprised to see the number of Indians who seemed to take pleasure in going to the evening services, which the resident Chaplain the Rev. Mr. Keene, held twice a week or oftener.

The labours of the Missionaries, both Catholic and Protestant, are trying and arduous, involving as they do, frequent long and dangerous journeys either by canoe or on snow-shoes, and much hardship and privation, in order to reach a population so scattered as is

that of this territory. The influence, teaching and example of the Missionaries are undoubtedly good, and calculated to advance the cause of religion and morality. Nor have their labours been by any means fruitless, although not so fruitful as they might and I have no doubt would have been were the Indians more settled in their habits and mode of life.

The Missions have been established and are altogether supported and maintained by the piety and liberalty of the English Church Missionary Society, with the countenance and assistance of the Hudson's Bay Company, who at their own cost erected the church and parsonage at Moose Factory.

EDUCATION.—There is a neat little school house at Moose Factory, but no schoolmaster; the people, however willing, being unable to pay the salary, or anything like the salary, that would be necessary to get a competent teacher. It is equally impossible for any excepting the chief officers of the Company to send their children elsewhere for their education. When they do so it is generally to Scotland, or England, sometimes to Red River, or other distant places in Canada. This is a source of great anxiety and distress to some of the residents, and if the Provincial Government could aid and assist in the establishment of a good school at Moose Factory, I do not know of anything that would give more general satisfaction. The people are not in a position there, and cannot be for years to come, to organize themselves into a school district, impose a school tax, and claim the aid of the Government on the usual terms. Such aid, if given at all, must be granted on exceptional grounds.

The Chaplain of Moose Factory devotes as much of his time as he can spare from other duties to teaching the young.

The natives are said to be very quick and ready to learn and are able to read and write their own language in their own character, in an almost incredibly short time.

Crime and the Administration of Justice.—Crimes in respect of property are not of very frequent occurrence. The natives are, on the whole, honest and trustworthy, given, if otherwise, rather to pilfering than to deliberate robbery.

At Moose Factory they appear to be quiet, respectful and well behaved.

The murder of a white man by an Indian is so rare as to be almost unheard of, but murder is too common among themselves.

An Indian who trades at Abittibi Post, is said to have murdered and then eaten his wife and children some fifteen or sixteen years ago. At the same post, more recently, a wretched man, having exhibited some signs of insanity, was knocked on the head and then thrust through a hole in the ice, as being, in the opinion of his friends, the best mode of disposing of him.

Only last winter two young men who traded at an Albany Post had some words as to the division of a deer which had been hunted and killed, I presume, in company, one of them treacherously shot the other, wounding his wife at the same time, and then killing the sister of the murdered man. The murderer has fled from that part of the country, fearing that the father or uncles of his victims will shoot him the first time they can set their eyes on him, as they will, I am told, most likely do.

So far as my information goes, I think I am warranted in saying that, while the Hudson's Bay Company's officers in this territory have been prompt to punish any crime committed against the company's property or servants, they have, as a rule, kept themselves entirely aloof from the disputes, feuds and quarrels of the Indians, whether as individuals, families or bands. They seem to have held that trade, not government, or the administration of justice, was their chief or only function, and to the prosecution of trade have devoted all their energies. The relatives of the wronged or injured have been left to administer justice and to maintain security of life and property among themselves in their own rough way. This policy of non-intervention, and of prompt retribution when necessary, has enabled the Company to plant and maintain its trading posts from the Atlantic to the Pacific, and from the great lakes to the Arctic, wherever it might

be thought most convenient and advantageous for the carrying on of the fur trade—among every band or tribe of indians however powerful, wild or turbulent—the trading posts of the Hon. Hudson's Bay Company may be found. At these posts are ample stores of all those things which an Indian most needs and most desires: of those things, in fact, most calculated to excite his cupidity. The posts are isolated and lonely, rarely nearer to each other than one hundred miles, and sometimes a far greater distance apart. In charge of the posts we may find perhaps a commissioned officer, a clerk, two or three servants and a few half-breeds or Indians employed about the place—a mere handful in all. And yet these coveted goods and the Company's officers and servants are (judging from the infrequency of any outrage) almost perfectly safe. The policy that has enabled the Hudson's Bay Company to do this may fairly claim to have been a wise policy, nor can the treatment of the natives generally, it is fair to infer, as viewed from the stand point of the Indians themselves, have been either characterized by bad faith cruelty or injustice.

Forty-seven years ago, (1832-33) one of the few outrages on record occurred at Hannah Bay Post, in this territory, about mid-way between Moose Factory and Rupert's House. The officer in charge, his family and several natives, in all nine persons, were treacherously murdered and the post robbed. In less than three months all the murderers were hunted down, and shot, by parties sent out from Moose Factory. It seems to me that they richly deserved the punishment meted out to them, and the promptitude and vigor with which it was inflicted has doubtless tended to restrain evil disposed natives, all over the territory, from similar acts of treachery, violence and murder, not only as regards the officers, servants and property of the Hon. Hudson's Bay Company, but of others also.

The administration of justice and the preservation of law and order in this territory, having now devolved on the Provincial Government and Legislature, it is proper and becoming that this duty should in future be performed, not only in an effective but in a regular and constitutional manner.

In addition to the steps already taken by the Government in this direction, it is indispensable to the adminstration of justice in even its simplest forms, and for offences of the simplest nature, that a lock-up, and other such necessary buildings, should be erected at Moose Factory.

At present the nearest gaol is at Sault St. Marie, some four hundred miles distant from Moose Factory, quite inaccessible during the winter, and only to be reached during the summer months at great expense. Provision should also be made for the appointment and payment of at least one constable. The position of Moose Factory, as regards ocean and river navigation, and the fact that it possesses a larger population than any other place in the territory, namely, about four hundred and fifty souls during the summer season, and one hundred and fifty during the winter, point to it as the proper place for such public offices as may be necessary in the meantime.

The claims, however, of the Hudson's Bay Company on the Moose island, and elsewhere in this territory, should be ascertained and settled as soon as possible.

Spirituous Liquors.—In old times a large quantity of ardent spirits, principally rum, was consumed in the Hudson's Bay Company's territory. It was, I am told, not only given as an allowance, but employed in their trade, and sold both to their servants and the Indians. The use of rum in trade, however, has been discontinued for many years. The reason for so doing I have not heard. Malt liquor was given or sold to the servants, and the officers had an allowance of wine and spirits, until a comparatively recent period. For some time past even this allowance has been cut off, and the servants and officers, as well as the Indians, reduced to a condition of involuntary abstinence.

The prohibition is not quite "total," however, so far as the officers are concerned, these gentlemen being permitted to import from London, by the Company's ship, half a barrel of ale or porter yearly. I apprehend that few, who are not total abstainers, will regard this as an excessive indulgence to men who lead such lives, in such a country and such a climate.

Until the award of the arbitrators (referred to at the beginning of this report) this territory was supposed, by some, to form a portion of Keewatin, or the north-west territories, and subject to the laws which excluded alcoholic liquors from those territories. As an integral part of the Province of Ontario I am not aware of any law to prevent a person from importing, or taking into the country, any quantity or description of liquor he pleases.

We are called upon, therefore, to consider whether in the present state of the population, such free and unrestricted importation of intoxicating liquors is desirable; and if not, what special legislation on this subject may be required. Knowing, as we all do, how dangerous many Indians, otherwise quiet and peaceable, become when under the influence of liquor, and how difficult it is to prevent their obtaining liquor when they are able and willing to pay an extravagant price for it, in furs or money. Taking into consideration, also, the remote and isolated position of this territory, and the slender means at our disposal, for the maintenance of law and order, I am quite persuaded that it would be dangerous to permit the unrestricted importation of intoxicating liquors in this territory.

This subject was again taken up in my report for the year 1882, wherein the following remarks in reference to the natives will be found, viz:

"In the first report which I had the honor to submit on this territory, the social condition of the natives was described at considerable length. With trifling and unimportant exceptions, the views and opinions then expressed have been confirmed by subsequent observation and experience. It is unnecessary, therefore, to go over the same ground again.

The population actually resident or domiciled in the territory claimed by Ontario, north of the height of land, cannot be very accurately ascertained, for reasons that need not be explained at length. I am of opinion, however, that the *bona fide* population does not exceed two thousand five hundred.

This is a very small number of inhabitants for a territory, the area of which is equal to that of England and Wales. It is even to be feared that the native population, small as it is, will be further reduced when it has passed through the ordeal that inevitably awaits it when brought into more general intercourse and contact with our race. In addition to those who will fall victims to the intemperate use of alcoholic liquors, several of the diseases, such as smallpox—against which we take special precautions—and others, such as measles—which we easily get over—are very fatal to the Indians; the mortality in the case of measles being almost as great as in smallpox. Last fall and winter measles carried off a very heavy percentage of the natives at Long Lake and Missinaibi posts, both in this territory; but fortunately it did not reach the posts on the coast of James' Bay.

Notwithstanding the smallness of the population, the food question is still by far the most important to the natives of this territory. Like all those who depend solely on hunting or fishing for a living, it is either "a burst or a starve," too often the latter. In most countries it is over population that leads to a deficiency of food and consequent famine. In this territory it arises rather from the great scarcity during the long winter months of those wild animals and birds which are capable of withstanding the cold, and of themselves obtaining food at that season. Among animals, the deer, bear, beaver, muskrat and rabbit are those on which the Indian chiefly relies for food. Of these, the rabbit, muskrat and beaver are, in this territory, by far the most important. When rabbits are plentiful the Indians do not suffer for want of food, although the flesh of the rabbit is not very nutritious. But this animal, really a variety of "hare," is subject to epidemics or diseases, which periodically destroy them almost entirely; and after one of these plagues has passed over the country they are so scarce that every creature that is dependent, either wholly or in any considerable degree, on them for subsistence, suffers accordingly. Thus not only the Indian, but the lynx, fox, fisher, etc., among animals, and the owl among birds, suffer more or less from starvation and hunger when the rabbits fail or become scarce. Rabbits have, unfortunately, been very scarce for several years, and a number of deaths from starvation have occurred among the Indians near the coast. Many more have barely escaped with their lives, and the suffering has no doubt been general and great.

At such seasons I believe the population would almost perish bodily but for the beaver. This interesting animal is of greater value than any other to the native population of this territory. The meat is wholesome and good ; and a full grown beaver, weighing, say forty pounds, affords, after deducting offal, skin and bones, as much probably as twenty-five pounds of actual food, besides the fur, the value of which often exceeds that of all the other furs trapped by the hunter added together. If sufficient numbers were left as a breeding stock, there is food enough in this territory for millions of beaver, but so little regard is paid to this vitally important point, that were it not for the extraordinary sagacity of the creature it must long ere this have been almost exterminated. One of the officers of the Company told me that in the neighborhood of his post there is a small lake or pond, the privilege of trapping in which he had acquired from the Indians, and, with a certain area of the country around, reserved for himself. In this pond lived a single pair of old beaver, which once a year gave birth to four young ones. For four years he had trapped the four young beaver, and the fifth year he had caught three, making in all nineteen beaver in five years from one pair. This was a remarkably good return, especially when we consider that they are entirely self-supporting, both summer and winter. But what I wish to remark more particularly in this connection is, that this gentleman frankly admitted he had been trying the whole time (five years) to catch the old beaver, but in vain; for up to that period their extraordinary sagacity had enabled them to elude the traps to which their inexperienced offspring had regularly fallen victims.

It is not that in the whole territory the quantity of game, in the aggregate, is insufficient to maintain the wretchedly small number of inhabitants ; but that game is so scarce that the hunter, let him cover as much ground as his strength will enable him to do, cannot obtain sufficient day by day, during the winter season, to keep himself and family alive. Neither deer or bear are at all numerous. Some few caribou and moose deer are killed in the central and southern part of the territory ; but they are very scarce, I think, in the flat muskeg region, near the coast. They are much more abundant on the Eastmain coast, and throughout the whole of the Labrador peninsula. The moose deer is only met with on or near the height of land.

Of winged game patarmigan and grouse, often called partridges, are the only kind which remain in the country during the winter. Sometimes the patarmigan or white grouse come from the north in considerable numbers, and when they do so are a godsend to the natives ; but they are by no means a reliable source of food. The variety of grouse most frequently met with is what we call the "spruce partridge," although the ruffled grouse or common partridge of southern Ontario is frequently seen in the southern and central region. Both these varieties breed in the territory.

Wild fowl are obtainable in considerable numbers in the spring and fall, especially on or near the coast, but leave for the south before the winter sets in. Pigeons, unaccountably to me, are very scarce in the territory. Nor are small birds of any kind at all numerous, excepting on the coast and islands in the bay.

The fish in the fresh water lakes and rivers are neither so plentiful or good as south of the height of land. In some few places a small kind of sturgeon is caught, and is good of its kind. Pike, however, and suckers are, I should say, the most important as a food supply ; the former, indeed, under the name of jackfish, being in many places all the natives can get during the winter. Some of the lakes contain whitefish and lake trout ; the pickerel or dore is also caught in most of the rivers. These, with a few speckled trout, and in some places a variety of chub, are the principal kinds of fish in the interior of the country. In the estuaries of the large rivers, and in Hudson Bay itself, there are other species ; these, however, have been fully described by Dr. Bell.

On the whole the food supply is precarious and uncertain ; and seasons of plenty bear, I fear, but small proportion to those of scarcity, if not actual dearth.

It was stated in my first report on this territory that the only hope I entertained of relief from this unhappy condition of the natives was in the opening up of the country. I am still of that opinion ; and this is one reason why I am anxious to see the Canadian

Pacific Railway located as far north as the interests of our Province and the Dominion will permit. Even admitting that the natives may not nominally receive a greater money value for their furs than is now paid by the Honourable Hudson Bay Company, all the necessaries of life would cost the Company very much less than they now do, in consequence of the cheapness of transport by rail compared with what it is by canoes. Thus at inland posts, such as Matawagamingue and Flying Post, they could give the Indians twice as much flour, oatmeal, pork, lard, sugar, and such like for their furs as they can possibly afford to do at present. Some of these Indian families (every member of which frequently traps and hunts) catch from two to three hundred dollars worth of furs in the season, and might really live very comfortably if the price of the necessaries of life were only moderate. I am satisfied, too, that as soon as the country is opened up a very little encouragement will induce the natives to turn their attention to the cultivation of the soil and the keeping of cattle.

The Indians, with their families, generally gather at the posts soon after the ice leaves the rivers, bringing the furs they have succeeded in getting during the winter. Most of the able-bodied men are employed from one to three months during the summer, taking the furs to Moose or Albany factories, and bringing back the supplies needed at their own posts. These voyages or trips are usually made in canoes or boats. Sometimes this brigade, as it is called, consists of forty or fifty men. The brigade is accompanied by one or more officers and the white servants, usually Orkneymen, at the posts. The white servants and the natives work together, eat together, and associate together, on equal terms. Even the officers often take part in the conversation, and describe or explain to the Indians, in their own language, matters which they would otherwise know nothing at all about. This association on their voyages and at the posts, continued year after year for several generations has, in my opinion, had a very important influence on the Indians as a means of education. The discipline, the steady labour, the necessity of working together for the attainment of a common object, are all calculated to teach them valuable lessons. They are, too, more or less keenly alive to the approbation or disapprobation of their officers and fellow-voyagers—a powerful incentive to good, and equally strong restraint from evil. Thus there is little or no shirking of a fair share of the labour, whether it be hauling, poling, paddling, or carrying on the portages ; but all seem to work together cheerfully, bearing heat and cold, rain or storm, and the incessant attacks of flies, with patience and fortitude. Either this or some other influence makes them generally honest, wonderfully forbearing towards each other in word and act, anything like quarreling being very uncommon. Watching, as I have sometimes done, when several of them were eating out of the same dish, I hardly ever noticed anything which appeared like greediness. On the whole they seem to be actuated by a feeling of fair-play which has not unfrequently excited my admiration. These lessons must have been learnt chiefly, I think, in the canoe and on the voyage ; for at the inland posts to which I particularly refer, missionaries have had little opportunity of inculcating the principles of Christian morality. I think they are intelligent and teachable, and have formed a high opinion not only of the progress already made towards civilization, but of their capacity for further improvement ; and I sincerely hope and trust that before long the opportunity may be afforded them of materially improving their condition."

A plea on behalf of the natives of the territory, especially in regard to exemption from Customs duties, on the necessaries of life, was preferred in the following terms, in my report for 1884 :

"The social condition of the natives was referred to at some length in my first report, 1879-80, see pp. 31, 32, *et seq.* In this report I stated "that a large proportion of the natives appeared to have more or less European blood in their veins." A more general knowledge of the population has confirmed this opinion. The European element is almost entirely Scotch, English and Scandinavian. There are very few French, Metis or Half-breeds in the territory. It is almost impossible to tell what number of inhabiants there may be in that portion of the territory north of the height of land, owned by our Province. The Dominion census of 1881 was obtained by enumerating all the families which traded at each of the Hudson Bay Company's posts, and, as many of

these were situated either on or near the boundary, the population, as thus taken, included Indians from both sides. My own estimate, as given in the report for 1879-80, was 2,500, and leaving out of consideration, "the treaty Indians," many of whom hunt during the winter in the territory north of the height of land. I still think that the population does not exceed that estimate.

In the opinion of some of the Hudson Bay Company's officers, with whom I have conversed on the subject, the native population in this territory is not decreasing, but although I have seen some large families at Albany Factory, and elsewhere, I am persuaded that the natives of the pure Indian race are not only decreasing, but must continue to do so. Disease, famine, and inter-marriage with other races, all combine to that end. Measles, whooping cough, and other epidemics, have carried off a great many within the last four years and as intercourse with the outside world becomes more frequent and general, smallpox and whiskey will each doubtless exact its quota of victims. The Hudson's Bay Company have a medical officer on the staff at Moose Factory, but at no other post in this department.

The mortality which these diseases occasion is greatly aggravated by the want of proper food, sufficient shelter, if not clothing, and of good nursing. A small hospital at Moose Factory is much needed and would save many lives.

A people depending so entirely on game and fish for their subsistence, somewhat improvident in making provision for the future, and with very inadequate means of preserving the surplus of food that may be obtainable at one season to meet the necessities of another, must frequently be reduced to the direst straits when game and fish fail. Indeed, with the exception of those employed as voyageurs and haymakers at the Hudson's Bay Company's post, and who for the time being are well fed, by far the greater proportion of the natives I meet with on my voyages look hungry and half famished. Even at the posts there are many hungry-looking women and children to be seen.

There are few (if any) Indian families, however, in the territory that do not now consume more or less flour, oatmeal, lard and pork, flour more particularly, of which some families will, notwithstanding its high price, use as much as four or five bags yearly.

Warm clothing and blankets are almost indispensable as food during the winter season. The natives no doubt at one time clothed themselves in the bear, beaver, and other skins that are now bartered or sold to the Hudson's Bay Company.

The skins of the rabbit or hare are still to some extent made into garments and blankets. They are not, however, very durable and are only fit for dry cold weather. Now however, the natives have generally come to depend on the Hudson's Bay Company for blankets, capots and other articles of clothing. In fact everything the natives use in the way of food, fleshmeat excepted; everything in the way of clothes, with the exception of mocassins, and every single article they require for other purposes, such as axes, knives, guns, nets or twine, shot, powder, etc., is imported from Great Britain.

It is only since the Hudson's Bay Company sold their exclusive rights of trade, etc., to the Dominion that the natives and other inhabitants of this territory have been burdened with any custom duties. It will be easily understood, therefore, that the present high tariff, increasing as it does the price of all the necessaries of life, is exceedingly grievous to them.

It is the more keenly felt inasmuch as, although the sum of $100,000* at least has already been collected from them at the port of Moose Factory alone, nothing whatever has been expended by the Dominion Government, whether for public works, postal facilities, support of schools, missions, medical attendance, or in any other form or way calculated to advance their comfort and welfare. In fact their closer connection with the Dominion of Canada, so far from resulting in any benefit to them, has been an unmitigated evil.

I believe that the Bishop of Moosonee (if not others) has made some representation on the subject of the grievances of the native population to the Premier and Minister of the Interior, but no action has been taken in reference thereto, that I know of.

*This prior to 1884.

Entirely isolated and cut off, as the people of this territory are, from all commercial intercourse with other parts of the Dominion, and deriving no benefit whatever from their political connection with the Dominion, it is from every point of view unjust that they should be thus taxed. Heaven knows the natives are poor enough, and suffer enough from insufficient food and clothing; and the exaction of taxes from these people, amounting on an average to at least ten dollars per annum each family, is not only unjustifiable but positively cruel.

The proper remedy for this injustice is to make Moose Factory and York Factory free ports, until connected by railway or otherwise with the rest of the Dominion. It may be objected that such a concession might lead to the smuggling of goods from this territory into other parts of the Dominion, to the injury of the revenue, as was said to have been the case when, (to encourage settlement) the ports in Algoma and Gaspe districts were declared free. There is nothing, however to support such an objection. A glance at the map will satisfy any unprejudiced person that the positions of the ports on Hudson's Bay, and those in Gaspe and Algoma district, are totally different. As regards the first, the ocean freight is so high, and the difficulty and expense of transport inland so enormous, that the idea goods so imported would be smuggled into the settlements on the north shores of Lake Huron or Superior, or even into the north-west, is absurd. Whereas, the running of such "free goods" from Gaspe into Quebec City, or from Sault St. Marie into Collingwood or Owen Sound, was a comparatively easy matter. Thus, while smuggling in the one case might be exceedingly easy and profitable, it would in the other be exceedingly difficult and entail a ruinous loss on the smuggler.

If there be insuperable objections to making these free ports, then unquestionably the amount of the duties thus collected should be expended or returned in such a way and manner as will be most generally advantageous to those by whom the duties have been paid. That these duties have increased the cost of all the necessaries of life to the consumers, in this part of the Dominion at any rate, no one can possibly with the slightest show of reason deny, nor will anyone have the temerity to assert that these customs duties have added anything to the value of the furs which are the only marketable product of the territory.

Nor is it by customs duties alone that the prices of the necessaries of life are rendered so dear. The cost of freight or transport, which greatly adds to the price of everything, is simply enormous in respect of some of the most important articles. For example, flour, lard and pork, if bought either in the United States or in Canada, must be sent first of all to London, then to Moose Factory, and thence inland by canoes or boats from one to three hundred miles.

Again, in view of the possibility of the loss or detention of their ships in Hudson's Straits or Bay, the Company must always keep a two years' supply of the most necessary articles at Moose and York Factories. This locks up a large amount of capital, the interest of which has also to be charged in the price to the consumer.

It is to be hoped, then, that the Dominion government will not delay to take into favorable consideration the peculiar and altogether exceptional position of the natives and others in this territory, and deal fairly, if not liberally with them.

Christian philanthrophy, which has done much to promote the spiritual welfare of the natives of this territory, might have done also a great deal to promote their temporal welfare comfort and happiness, The one has been the work of the Church Missionary Society of London, and of the Catholics of Quebec; the other should have been, it seems to me, the special care of the Hudson's Bay Company.

The servants of the company, as distinguished from the hunters and trappers, are engaged for a term of years, at wages varying from twenty to thirty pounds a year, with a ration of food sufficient only for themselves. A few of the mechanics may get more, but the wages do not usually exceed that amount. Many of these are Scotchmen or Scotch half-breeds. As long as they remain unmarried they can live, and even save money. Few, however, do this; the far greater number marry Indian or half-breed women. The single ration, together with what the wife may be able to add by fishing

and hunting, suffices the young couple for a while. But as child after child is born, the annual pittance of wages is drawn upon not only for clothing but for food. At the prices charged (and which it is to some extent necessary to charge) in this territory, the man's wages will not go very far. The quantity of game and fish at or near the trading posts is neither great nor at all times to be procured. And when the families are large and chiefly girls, they are, I fear, very sorely pinched to live. If the father dies, their condition is still more pitiable. There is no employment for women, and as to getting out of the country to seek it elsewhere it is simply impossible. It is a mystery to me how many of them do live. If some scheme could be devised to afford these and other poor women remunerative employment, it would greatly ameliorate and improve their condition.

One suggestion I may be permitted to make, and I do so in the hope that it may commend itself to favourable consideration.

A very large quantity of ready-made clothing is imported for the people in this territory, or for what is known as the Southern Department. The greater part, if not the whole, of this clothing could be, just as well if not better, made by the women at Moose Factory, Albany Factory, and Rupert's House, to whom such employment, at anything like reasonable and fair wages, would be one of the greatest of blessings. By the importation of the materials only, instead of the made up or manufactured articles, a very considerable amount of duty would be saved.

All that is needed to carry out this scheme is an experienced foreman and a sufficient number of sewing-machines. A foreman having a knowledge of cutting and fitting men's clothes, with a wife who had some knowledge of dress-making, would probably be the best combination.

So far from costing anything, I believe this suggestion, if carried out, would save the present importers a considerable sum of money. But even if it should not do so, and be only self-sustaining, the benefits that it could not fail to confer on a number of poor girls and women at the places referred to, should ensure its adoption.

If the natives could be induced to turn their attention to the cultivation of the soil, even if it were confined to the growth of potatoes, they would form an important addition to their supply of food. But peas and beans can be also grown in the greater part of the territory, and as food for the Indians these are not only exceedingly nutritive, but have over most other grains this advantage, that they can be used whole or unground, thus dispensing with the necessity for mills. The land thus cultivated should be on or near the hunting ground of each family, in order that the food produced might be available, where and when, most required. The few simple instructions needed in reference to the choice of the land, and the planting of the seeds, might be very easily imparted at the missions or at the fur-trading posts. If the Government supplied seed for a few years, the cost of which would be very trifling, I am persuaded that the missionaries would willingly undertake to distribute it, and do all in their power to insure the success of any effort to ameliorate the condition of the natives in this or any other way."

No treaties have yet been concluded with the Indians in this territory for the surrender of their claims. To do so with the natives on or near to the coast of James' Bay may perhaps be premature and uncalled for by circumstances. But as regards the Missinaibi and other Indians, whose case I have promised the chiefs of the former band to represent, there can be no reasonable doubt on this subject. The Canadian Pacific Railway for upwards of a hundred miles passes through their hunting grounds, and will unquestionably lead, sooner or later, to the destruction of the larger game, the fur-bearing animals, and to some extent also of the fish, on which they are solely and entirely dependant for a living. These Indians are simply hunters and trappers, and not one in twenty grows even so much as a potato. Thus they have no other resources to fall back upon. The completion of the railway renders their hunting grounds easily accessible at all seasons of the year. Hence it may be expected that white hunters and trappers from other parts of Ontario and from Quebec will pour into

this territory. It is probable also that a large number of Indians belonging to bands south of the height of land, whose own hunting grounds have been depleted of game and fur-bearing animals, will also trespass on the hunting grounds of these northern or height of land Indians. Nor can it be doubted that railway employees, squatters and lumbermen will engage in hunting and trapping for profit or amusement. Thus there are too many and strong grounds for fearing that these poor Indians will soon be deprived, in a great measure, of their only means of subsistence.

It is true that the construction of this railway will materially reduce the price of provisions, but this cannot compensate the Indian for the loss of the furs and of the game which his traps and his gun alone would otherwise have obtained for him. It matters little to him if the price of food and clothing may be lower, if he is unable to get the furs to barter or give in exchange for them.

I shall only add, that, with this single exception, treaties have, I believe, been concluded with every tribe or band of Indians, from Lake Nipissing to the Rocky Mountains through whose hunting grounds the C. P. R. passes, and that all these bands have been for years in the receipt of annuities and presents. A number of years have now elapsed since the line on the height of land plateau was located, and since the Indian Department was aware (or should have been) that it passed through their hunting ground, and no steps have as yet (so far as I know) been taken toward making a treaty, either with this Missinaibi band, or those at Flying Post and Mattawagamingue. Why it is these Indians have been thus neglected, I cannot positively say. It is possible that being neither turbulent or noisy, they may have been simply overlooked. I hope, however, that the matter will be brought to the notice of the Superintendent General of Indian Affairs, and that a treaty will be made, granting to these Indians that measure of justice to which I conceive they are fully entitled.

It may be thought by some that this is a matter in which the Provincial Government has no interest, and with which therefore, it has nothing whatever to do. But those who thus think labor under a mistake. The Provincial Government is charged with the preservation of the peace, and the protection of life and property in this territory. If these Indians become exasperated at the continued neglect of the Dominion Government, they may be tempted to take the law into their own hands, and deal very summarily and severely with trespassers on their hunting grounds. It is hardly to be expected that Indians (however peaceable and well-disposed) will tamely and without protest allow strangers to shoot and trap on hunting grounds, which have been theirs and their forefathers' from time immemorial; taking as it were the very bread out of the mouths of their children. Such a state of matters may lead to deplorable consequenses and not only put the Province to a great deal of trouble and expense, but retard settlement and the development of the resources of the territory. Thus it will be seen that the Province of Ontario has a very direct and material interest in the speedy conclusion of a satisfactory treaty with these Indians.

If the Superintendent-General of Indian Affairs should be moved to make such a treaty, the following suggestions are calculated, in my opinion, to promote their welfare, and may not be unworthy of consideration: 1st. Whatever annuity the Department may agree to pay them for the surrender of their rights, that amount (at the outset at all events) should be, I think, paid in kind, and not in money. These Indians have very little idea of the value of money or currency. Their trade has been carried on exclusively with the Hudson's Bay Company, and in that trade no money is used. If paid their annuities in money, they would be easily imposed upon and tempted by unprincipled traders and pedlars to spend it in the purchase of worthless trinkets, shoddy clothing, confectionery and whiskey.

I would respectfully suggest that the annuity should be paid entirely in flour, which is already (with many of these Indians) one of the necessaries of life, and will be of still more vital importance when game becomes scarce and difficult to obtain. There is not an Indian family in the territory but will require yearly, a quantity of flour, equivalent in value to the five dollars per head, or whatever sum the annuity agreed upon may

amount to. Food is the Indian's most pressing want, and starvation during the winter season their greatest peril. By all means then, let this annuity be given in the form best calculated to appease their hunger, and to avert this danger of starvation.

At present prices, an Indian family consisting say, of himself, his wife and three children, or five in all, might be expected to receive at least ten bags of good flour annually. With this flour and such game and fish as they might still be able to procure, I think there would be no danger of their starving to death. For such other articles as they might require, they would in future, as now, have to depend on the furs they might be able to catch during the winter. The flour should be delivered to them, at such of the Canadian Pacific Railway stations as they might desire, for it is important that this point should be as convenient to their hunting grounds as possible. As a general rule too, it would be a wise precaution, and one conductive to their welfare, if two-thirds of this flour were given as late in the autumn as possible, say about the middle of September; sufficient time of course being allowed to enable them to return to their hunting grounds before the close of the navigation. The Indian may be pressed with hunger, even in the summer, but it is in the winter season that he starves to death. There may be cases in which an Indian's hunting ground is so remote from the railway, and the canoe route so bad, that it would be a matter of great difficulty if not an impossibility to get so much flour taken over it. In such cases the Indians might be allowed a part of their annuity in lard, the article of food next in importance to flour, and of course much easier to carry than a quantity of flour of equal value. Two important objects, would, I claim, be secured by this mode of payment: 1st, the Indian will get his annuity in articles of the greatest importance to himself and family, if not necessary to their very existence; 2nd, he cannot readily exchange these for anything else less useful, altogether useless or actually pernicious. For instance, a whiskey pedlar (the price of whose liquor may be, say, two and a half dollars a bottle) if paid in silver or in bills might do a very large and profitable business. But if compelled to shoulder a bag of flour for every bottle he sold, it would seriously interfere with the success of his venture, besides greatly increasing the risk of detection and punishment.

There is one other suggestion only which I shall make. Owing to the scarcity of game, and of fur-bearing animals, the Indians north of the height of land cannot possibly live together in any considerable numbers, more especially in the winter season, Each family requires not less than fifty, and frequently as much as one hundred square miles of country to supply fur-bearing animals and game sufficient for its maintenance. If the Indians, therefore, are not to abandon hunting and trapping altogether, they must of necessity reside two-thirds of the year on their hunting grounds. It consequently appears to me, that in this territory at any rate it will be bad policy to insist on herding the Indians together on what are called reserves. The advantages that are claimed for such a policy elsewhere may, or may not have been realized, but in this territory at all events, I contend that such advantages will be greatly outweighed by the evils such a policy will entail. In any treaty therefore with these Indians, it would be far better, in my opinion, to allow each family to select a homestead on its own hunting-grounds, and dispense with large reserves, which too often retard and keep back the settlement of the country, without securing to the Indians the advantages that are expected.

Small reservations of a thousand acres or so each, might be retained for their use, near the Hudson's Bay Company's Posts, or at other points where they will be most likely to gather to trade their furs, and lay in their supplies. Here they would camp for a short time in the summer, enjoying all the social intercourse they care for. At other seasons they will be on their hunting grounds engaged in hunting and fishing, pursuits thoroughly congenial to their nature and habits. They will thus be not only far more contented and happy, but almost, if not altogether, self-sustaining, and not nearly so troublesome, I believe, as those Indians who are obliged to live the whole year on their reservations."

I have, in the reports just referred to shown that, in my opinion, treaties should have been made several years ago with those bands of Indians in the southern part of this territory, through or near to whose hunting grounds the Canadian Pacific Railway passes. I still remain of that opinion, for the reasons therein given.

If, however, this cannot be done at present, or if it be not expedient under the circumstances to make such treaties, I would respectfully suggest the following as, in my humble opinion, the only course the Government can pursue, which will effectually protect these Indians against the robbery, hardship and injustice of which they complain.

In the first place (if within the power of the Provincial Legislature), a law should be enacted to protect the rights of the natives of this territory, in respect of the game, fish and fur-bearing animals on their hunting grounds. Such a law should strictly prohibit both white men and other Indians from hunting, fishing or trapping on "unsurrendered territory" north of the height of land; or, at all events, without a special license so to do from the proper authority.

In the second place, no unlicensed person or persons, not already authorized, should be allowed to enter into such unsurrendered territory, with the intent to trade with the Indians.

The penalties for a breach of these laws, in addition to fine and imprisonment, should include forfeiture of the guns, traps, nets or other engines used in the capture of, as well as all game, fish and furs found in the possession of the offending parties.

I consider such laws both expedient and just, pending the arrival of the time when it may be advisable to make treaties with the Indians for the surrender of all their claims. And that for the following reasons:

1. The restraints which they will impose on unauthorized parties, are absolutely necessary for the protection of the natives, who are solely dependent on the game, fish and fur-bearing animals for existence. The territory being now partially opened up and rendered accessible, hunters and trappers will be tempted, as already said, to come in and trespass on their hunting grounds. From the absence of serious crimes and otherwise, it may be inferred that these Indians are, as I have elsewhere stated, honest, peaceable and quiet. But, if not prevented, the reckless and unjustifiable destruction of their game and of their fur-bearing animals will leave the poor natives no alternative but to defend their rights or starve. Hence the probability of bloodshed.

2. The men who thus trespass on their hunting grounds, regardless of the "moral," if not legal claims of these non-treaty Indians, are not likely to be in the least concerned as to the means employed, the season of the year, or whether or not a sufficient number of the animals are left to keep up the breed. Hence the speedy destruction of the more valuable fur-bearing animals in all those parts of this territory rendered easily accessible by railways or otherwise must follow.

3. Much of this northerly part of Ontario is possibly better fitted for the growth of forests and the subsistence of fur-bearing animals than for anything else; and the growth of the one is quite compatible with the existence of the other in the same region. Timber of all kinds is becoming scarcer and more valuable as the population of this continent increases. Furs and game, too, of all kinds never fail to find a market at home or abroad at good prices.

Under these circumstances, taken in conjunction with the smallness of the returns now obtained by farmers on other than the richest soils—in the finest climates, and from land most advantageously situated in regard of markets—it may be, perhaps, the best and wisest policy on the part of the Provincial Government to devote no inconsiderable portion of this territory to the growth of timber, and, as a natural consequence, the multiplication of fur-bearing animals and game.

But be this as it may, I am satisfied that under proper regulations, and with the protection suggested, the fur-bearing animals, game and fish in this vast territory will afford employment to, and subsistence for all the native hunters in the country for many years to come.

Why not, then, afford this needful protection and allow them to follow the pursuits to which they are most perfectly adapted by nature and in the exercise of which, they will not only be more successful, but happier than in any other. It is obviously not to

the advantage of the people of this Province—nor of the Dominion for that matter—to be saddled with heavy payments in the shape of Indian annuities before there is any real necessity for it. If therefore the Provincial Legislature, with or without the co-operation of the Federal Government, can reserve to the exclusive use and benefit of these natives the game, fish and fur-bearing animals, they will remain practically in the enjoyment of all that they have ever made any use of—or derived the least benefit from—or in fact of all that has been of value to them.

So long, therefore, as they are protected in the enjoyment of these, their most valu able rights, they will be easily persuaded, I think, to give their consent to our making such use as we see fit, of the timber and the minerals—if not (to a limited extent) of the soil also. For if properly explained, they cannot fail to see that, while there need be no decrease or falling off in the quantity of furs trapped or caught, the value thereof will surely be increased—and the price of everything they require diminished—as the country is opened up and its mining and lumbering resources are developed.

As regards the proposed law or regulation, requiring that parties desirous of trading with the natives in this territory, shall obtain a license so to do, I may observe that, in my opinion, such a law is necessary to prevent the Indians being debauched with intoxicating liquors and cheated, if not robbed, by unprincipled traders. The amount charged for such licenses (which should be renewable annually) is of little consequence; the chief object being to confine this trade to responsible men of good character—men able to give bonds in a good round sum, that alcoholic liquors will not be used in the trade, nor the Indians otherwise defrauded of the value of their furs.

The Honourable Hudson Bay Company have not for many years (much to their credit) employed intoxicating liquors in carrying on their fur trade in this northern territory.

I have reason to believe, however, that such liquors are now being introduced into the territory by other traders. This, if not checked, in some such manner as that suggested, will soon become general, and cannot fail to lead to the usual disastrous consequences.

While enormous sums of money have been spent on the Indians in the west and northwest, I know of absolutely nothing that has been expended on, or anything that has been done for the natives and others in this territory—unless it be to tax them. The total amount received by the Dominion in the shape of customs duties since confederation, on goods imported at Moose Factory, and from dutiable articles—imported at Montreal for Abittibi, Mattagami, Missinaibi and other posts in the southern part of this territory—cannot be less, I am inclined to think, than $200,000, and possibly a quarter of a million dollars. It is, to say the least, a heartless and cruel thing, to exact such a monstrous sum of money as this, from a people so few in number, and of these, many of them so poor.

If the duties cannot be remitted altogether, some portion at least of this money might be, and should be, refunded.

The way in which this should be done does not rest with me to decide. I may, however, be allowed to point out some things that appear most important to, if not most wanted by, the people of the territory.

Their most pressing needs are, I conceive, (1) better prices for furs, (2) the ability to obtain the conveniences and necessaries of life at lower rates, (3) medical attendance, (4) schools, (5) mails, (6) hospital (at Moose) for the sick, (7) religious instruction, (8) protection for life and property.

Having expressed my views on most of these subjects, in former reports, as will be seen by the extracts given—little more remains to be said. As regards the first and second "needs"—reasonable competition, and a reduction in the cost of transport and travel are the proper remedies.

3. On the subject of health and medical attendance, I have already reported to the Provincial Board of Health. Among other things, I suggested that a medical man should be appointed, whose duty it would be to visit the Indians—when gathered together at

the Honourable Hudson Bay Company's posts on or near the height-of-land—as they always are for several months in the summer. A suitable man, one not only possessed of a competent knowledge of his profession, but capable of feeling and taking an interest in his work, and anxious to promote, not merely the health, but welfare and happiness generally of the natives, in short a philanthropist as well as doctor, might prevent, as as well as cure, a great deal of suffering and disease, save many lives and do an immense deal of good otherwise.

To provide and pay such a man is, in my opinion, the duty of the Dominion Government. The Hudson Bay Company solely, at their own expense, maintain doctors at Moose Factory and at York.

4. I do not know what the Hudson Bay Company has done to promote education in other parts of the vast territory over which it so long held almost undisputed sway, and from which, it is believed, to have realized in former times at least such enormous profits. In this territory it does not appear to have done much. Even at Moose Factory—the principal trading post and centre of population—where the Company has ruled for two hundred years, and where still everything may be said to be owned by, a d every one dependent upon the Company, I am not aware that it has granted or is now granting any aid or assistance, whatever, toward educating the Indian children or even the children of its servants and officers.

It is true that of late years a small school house has been built at Moose Factory, and that the Church of England missionaries have devoted as much time as they could well spare, from other duties. to teaching the children both of the Indians and of the Europeans. I am told, however, that during the winter the school house is so cold that the children cannot attend and that it is for the most part closed. And further, that during the summer the missionaries are so much occupied that the hours are both short and irregular. To the Indians, what little education they do receive is of the greatest importance and value, even when confined, as it generally is I believe, to a knowledge of reading and writing in their own language and in their own peculiar character. But the education thus afforded will not enable, even the Indians, to become anything more than hunters, trappers or voyageurs, and falls far below that obtainable by the poorest white children in any other part of the Province.

Such of the Company's officers, as can afford to do so, send away their children to England, Scotland, or to far distant parts of Canada to be educated. It is not only a great expense but necessitates long and painful separation of the parents and children. Those who cannot do this, whether from the largeness of their families or because they occupy less lucrative positions in the service, the officers who have not yet obtained commissions, the clerks, small postmasters or traders, the mechanics and servants, see with anxiety and sorrow their families growing up to manhood and womanhood, either altogether uneducated, or with an education so imperfect as to afford very little hope of their being able to make an honest and comfortable livelihood in any other part of the world. While. on the other hand, if they remain where they are, their prospects are too sad to be contemplated by most parents with other than feelings of the deepest solicitude.

The best and most central point for a school is Moose Factory, and it should be a good school. It can itself furnish, I am told about 100 pupils in the summer and about half that number during the winter. But in addition to these, I have no doubt children would be sent to it, from all the other trading posts in that department.

One male and one female teacher with second class certificates, and a third teacher with a knowledge of the Indian language and written character would probably be enough unless an industrial school for girls were added, as it certainly should be if possible.

The necessary buildings—consisting of school house, master's residence and a boarding-house—should be put up, in my opinion, by the Dominion, as a refund in part of the large sum before referred to, as having been exacted from the people of this territory in the shape of customs duties. The working expenses might be borne jointly by the Indian Department, the Provincial Government, the Hudson Bay Company and the

people themselves. Until the country is more fully opened up than at present and the expenses of transport diminished, the cost of running such a school, as is contemplated, would probably be about three thousand five hundred dollars a year.

Allowing that the Indian Department, the Education Department of the Province, and the Hudson Bay Company, should each be willing to contribute a thousand dollars, it would leave about five hundred dollars to be raised by the parents, a sum, which, poor as they are, I am persuaded they would gladly pay for the inestimable blessing of a good education for their children—such an education as would fit them for any position to which they could reasonably aspire.

I sincerely hope and trust that this matter which I have promised to represent to the Government may receive the favourable consideration of the Hon. Minister of Education.

5. Another of the needs of the inhabitants of this part of the province is a mail, say monthly. At present the people at Moose Factory and on the coast generally only get three mails from Montreal, and one by sea from London, in a year ; and these are carried by, and at the expense of the Hudson Bay Company. A monthly mail would be a great boon, especially to those of our own race in this remote part of the Dominion. If these people had votes, and were "represented" as well as "taxed," their wants, I venture to think, would be much more likely to receive that consideration to which they are justly entitled.

As there are two months, one about the close, and the other just before the opening of navigation, during which it would be all but impossible to make the trip either on snow-shoes or in canoes, the number of trips would really be only ten : the cost of which would not exceed, I think, twelve hundred dollars. In view of the fact that the net revenue received from Moose factory alone, by the Dominion Government, amounts to about $12,000 a year—a refund in this form, of one-tenth part thereof may be properly regarded as a right, rather than a favor.

6. It was also mentioned in a former report that, in my opinion, a small hospital for the sick, at Moose Factory would save many lives, both of natives, and Canadian or Old Countrymen. I retain that opinion, being fully convinced that, of what may be called "untimely" or premature deaths more occur from the want of proper food and good nursing when sick, than from any other cause. A hospital, if no larger than to admit of ten or twelve cots being made up, would not only save many lives, but alleviate a great deal of suffering. I consider that the cost of putting up and furnishing this hospital should also be borne by the Dominion, and made a charge against the $200,000 which, as already stated, has been wrung out of the pockets of the poor people of this territory.

Toward the maintenance of the hospital when built and properly furnished, some assistance might be anticipated from the Hon. Hudson's Bay Company. As the company, however, keep and pay the medical officer at Moose, it might not in its corporate capacity, feel inclined to do more. But there are many wealthy and benevolent men who either have been in old times, or may still be connected with this company, some of whom, as well as of the general public, will, I am persuaded, contribute liberally toward the support of such a necessary and excellent institution. The people of the country would doubtless do all they could, and the Provincial Government may be confidently expected to grant at least the assistance afforded to other hospitals.

If therefore the Dominion Government should see fit to put up and furnish the building, the cost of which need not exceed ten thousand dollars, I am convinced that private and public beneficence will amply provide for its maintenance.

It is not merely during the prevalence of some epidemic that a hospital at Moose Factory would be a blessing, nor would its usefulness be confined to that portion alone of the vast territory bordering on Hudson's Bay, which forms part of the province.

The only place between Albany Factory and Whale River on the coast, and between the coast and the height-of-land whereat a doctor is stationed, and where medical advice, surgical assistance, or even suitable medicines can be obtained, is Moose Factory. In

this territory, the area of which greatly exceeds that of all Ontario, south of the height-of-land, the Hon. Hudson Bay Company have nearly twenty fur-trading establishments, variously called "factories," "houses," and "posts." In addition to the natives who trade there, the company have officers, clerks, mechanics and servants at the more important posts, and an officer and servant at even the smallest. These are generally Englishmen or Scotchmen—for the most part married and the fathers of families.

To families thus situated, and even to some of the natives at these isolated posts where it is impossible to obtain proper medical advice or assistance, however urgent the necessity, a hospital at Moose Factory would frequently prove an unspeakable blessing. At these posts, patients suffering from disease or bodily injuries (especially gun-shot wounds) often die, or become invalids or cripples for life, who, if sent to a hospital, might be cured. Many men would not only send their wives or children to such an institution, when necessary, but cheerfully pay for their maintenance while there.

7. I have little to add in regard to the religious condition or wants of the people, in addition to what was said in my first report and in that for 1883, from which last, I beg to quote the following information furnished on this subject by the Right Reverend Dr. Horden, Bishop of Moosonee:

"The Moose mission was commenced by the Wesleyans about the year 1838, who sent to Moose Factory the Rev. G. Barnsley, who laboured nine years at Moose and elsewhere in the country very indefatigably, meeting with considerable success and baptizing a large number, both of Indians and half-castes; he then returned to England and for four years the mission was unoccupied. But Mrs. Miles, wife of the gentleman then in charge of Moose Factory, a woman of great influence among the natives and a sincere Christian, exerted herself in a most praiseworthy manner to keep the natives, in remembrance of the faith they had embraced, constantly exhorting them and organizing prayer-meetings among them. The Wesleyans, then in considerable difficulties and unable to send a successor to Mr. Barnley, invited the Church Missionary Society to take up the work; this they did, and in 1851 Mr. and Mrs. Horden were sent to Moose under their auspices; in 1852 the mission was visited by Dr. Anderson, the first Bishop of Rupert's Land, who ordained Mr. Horden deacon and priest during his stay. During his Lordship's visit the Rev. E. A. and Mrs. Watkins arrived from England to strengthen the mission, and were sent forward to occupy Fort George on the eastern shore of Hudson's Bay. The bishop visited Moose again in 1855 and 1859, each time expressing the greatest satisfaction at the progress he witnessed. One great cause of advancement was the translation of large portions of the Scriptures into the Indian language, the first of which were printed by Mr. Horden himself at Moose, with a press sent to him by friends in England. These books are all written in a syllabic character, the principle of which is that each letter represents a whole syllable, a consonant and vowel combined; the system is easily acquired and is almost universally known by the natives of the whole Diocese of Moosonee, books being printed in it in the Cree, Ojibbeway, Eskimo, and Chipewayan languages. In the Cree Mr. Horden has translated the New Testament, the Old Testament, lessons for Sundays and holy days throughout the year, the psalter, common prayer book, hymn book, and Bible and gospel history. Into the Ojibbeway have been translated the book of common prayer, St. Matthew's Gospel, Acts of the Apostles, hymn book, and Bible, and gospel history, and several works into the other two languages named.

The mission continued to grow and prosper, extending its influence more and more every year, until it was felt that the time had arrived for combining the missions around the bay into a bishopric, and accordingly Mr. Horden was invited to England in the autumn of 1872, and on December 15th, was consecrated in Westminster Abbey as the first bishop of Moosonee. For the effective working of the immense diocese placed under his charge, the bishop divided it into six districts.

With the exception of the Eskimo in the vicinity of Churchill and northwards, nearly all the natives have been received into the Christian church, and except the Indians of the Abittibi, Waswanepe, Machiskun, and half those connected with Albany who are Romanists, and those of Oxford House, who are Wesleyans, all are in connection with

the Church of England. The clergy, under the bishop, labour most indefatigably and there is not one of them of whom the bishop does not speak in the highest manner. Churches have been erected, a part of them by the Hudson Bay Company, at Moose, Albany, Fort George, Rupert's house, Little Whale River, York, Severn, Trout Lake, Matawakumma, Flying Post, and Churchill, while another is now being built at Mistasinee. Confirmations have been held in the diocese, when it formed part of the diocese of Rupert's Land; the bishop of Moosonee has confirmed at York, Churchill, Severn, Trout Lake, Moose, New Post, Albany, Rupert's House, Eastmain, Fort George and Matawakumma, and has confirmed 697 persons.

The number of communicants at Moose is 105, and in the diocese altogether about 700."

"The following are the districts into which the diocese of Moosonee is divided, with the population and language spoken:

No. 1, Moose, comprising:

	Population.	Languages.	
Moose	395	English.	Cree.
New Post	34	"	Ojibbeway.
Abittibi	380	"	"
	809		

No. 2, Albany, comprising:

Albany	500	English.	Cree.
Henley	60	"	Ojibbeway.
Martin's Falls	300	"	"
Osnaburgh, Cat Lake	440	"	"
	1,300		

No. 3, Rupert's River, comprising;

Rupert's House	362	English.	Cree.
Eastmain River	103	"	"
Waswanepe	129	"	"
Mistasinee	114	"	"
Machiskun	61	"	"
Nitchekwun	77	"	"
	846		

No. 4, East Main, comprising:

Fort George		English.	Cree.
Great Whale River	310	"	"
Little Whale River	500	"	Esquimaux.
	810		

No. 5, Matawakumma, comprising:

Matawakumma	105	English.	Ojibbeway.
Flying Post	114	"	"
Metachewan	87	"	"
Misenabe, Brunswick	250	"	"
	556		

No. 6, York, comprising:

	Population.	Languages.	
York	330	English.	Cree.
Severn	200	"	"
Oxford House	350	"	Ojibbeway.
Trout Lake	350	"	Esquimaux.
Churchill	350	"	Chipawayan.
	1,586		

In some cases in above table the numbers are but approximate while in others they are exact.

No special mention need be made of timber, the kind and quality of which in this territory have been so frequently described in former reports and incidentally in various parts of this.

There is a good deal of valuable pine in the territory between the Mattagami Post and Flying Post, and southward to the Height of Land.

The other timber, more especially the spruce, tamarac, and aspen poplar, cannot fail to prove immensely valuable, when the supply of pine gives out, if not sooner.

As hinted under another head, it may be worthy of the serious consideration of the Government whether it will not be advisable to devote a very large area of land in this northern part of the province almost entirely to the growth of timber.

Now that this territory has undoubtedly come under the jurisdiction of the Provincial Government, I have every confidence that all needful provision will be made for the preservation of law and order, and to promote the well-being of its inhabitants otherwise.

Respectfully submitted,

E. B. BORRON,
Stipendiary Magistrate.

APPENDIX.

Letter from Dr. A. R. C. Selwyn, C.M.G., LL.D., F.R.S., Director of the Geological and Natural History Survey, giving the result of an examination of Kaolin or China-Clay and of White-sand :

OFFICE OF THE GEOLOGICAL SURVEY, OTTAWA.

15TH JANUARY, 1890.

DEAR MR. BORRON,

I enclose for your information result of an examination I have had made of some specimens Dr. Bell gave me a few days ago, and respecting which he said you desired some information. They are good, and whenever they can be made accessible might be largely utilized for various purposes.

I would like to get good sized specimens for the museum.

Yours sincerely,

ALFRED R. C. SELWYN.

E. B. BORRON, ESQ.,
Collingwood.

OFFICE OF THE GEOLOGICAL SURVEY, OTTAWA.

JANUARY 14th, 1890.

SIR,—The following has reference to the specimens received from Mr. E. B. Borron :

Specimen labelled, "White kaolin from bed in felspathic sand fifty feet above Missinaibi River."

This material forms with water a plastic mass, burns white, may be said to be infusible. It is well adapted for the manufacture of all kinds of refractory ware, *i.e.*, fire brick, lining for grates, crucibles, scorifiers, and the like. If employed for fine ware it would require to undergo a preliminary treatment to free it from the numerous fine scales of mica which it contains.

Specimen labelled, "Felspathic sand, 100 feet above level of Missinaibi River."

This sand consists of grains of colorless quartz, with an occasional grain of undecomposed felspar, and a small amount of intermixed kaolin.

Specimen labelled, "Felspathic sand, 50 feet above Missinaibi River—sifted."

This sand is made up of grains of white translucent quartz, an occasional grain of undecomposed felspar, and a little intermixed kaolin.

I have the honour to be,
Sir,
Yours obediently,

G. C. M. HOFFMAN,

To Dr. A. R. C. SELWYN, C.M.G., F.R.S.,
Director, Geological Natural History Survey of Canada, Ottawa.

BINDING SECT. AUG 23 1967